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PROPOSALS TO CONTROL THE MANUFACTURE, USE, AND DISPOSAL OF OZONE-DEPLETING SUBSTANCES

HEARING

BEFORE THE

SUBCOMMITTEE ON
ENVIRONMENTAL PROTECTION

OF THE

COMMITTEE ON
ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE

ONE HUNDRED FIRST CONGRESS

FIRST SESSION

ON

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PROPOSALS TO CONTROL THE MANUFACTURE, USE, AND DISPOSAL OF OZONE-DEPLETING SUBSTANCES

FRIDAY, MAY 19, 1989

U.S. SENATE,
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS,
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION,
Washington, DC.

The subcommittee met, pursuant to notice, at 10:05 a.m., in room 406, Dirksen Senate Office Building, Hon. Max Baucus (chairman of the subcommittee) presiding.

Present: Senators Baucus, Lautenberg, Lieberman, Chafee, Jeffords, Durenberger, and Graham.

OPENING STATEMENT OF HON. MAX BAUCUS, U.S. SENATOR FROM THE STATE OF MONTANA

Senator BAUCUS. The subcommittee will come to order.

The purpose of today's hearing is to focus on legislative proposals to speed protection of the Earth's ozone shield. These proposals can be broken into two groups. First, there are proposals such as fees on excess profits from the production of CFCs and recycling requirements to minimize the release of CFCs during manufacturing. These proposals are meant to speed implementation of the Montreal protocol.

Then there are proposals which go beyond the current protocol. These bills include the various phaseout proposals, and in considering these phaseout proposals, you must look closely at chemical substitutes which are far more protective of stratospheric ozone than the current chemicals but that still deplete ozone at some lesser rate. These chemicals can play an important role in moving away from current CFCs.

Before I discuss these proposals, I would like to briefly describe the situation as I see it. The Montreal Protocol is the most significant environmental protection measure ever adopted. It provides great hope for the future, hope that the world community can work together to protect global environment. It has gone into effect and is gaining worldwide acceptance.

Unfortunately, we recognize today, as a result of new information developed since the accord was negotiated, that many of the measures of the Montreal Protocol are woefully inadequate. President Bush has recognized its inadequacy and is calling for a complete phaseout of the production of CFCs by the year 2000, so long as substitutes can be developed.

This is a positive step in the right direction, but it does not go far enough. Many have called for earlier phaseouts. I, myself, have called for a ban on the use of these substances in new manufactured goods after 1994.

Great Britain has called for a 1997 phaseout. Norway proposes similar action. The Soviet Union has called for the inclusion in the phaseout of the use of an additional substance, methyl chloroform. There appears to be a consensus growing worldwide to strengthen the Protocol. This is all very positive.

The question confronting us today is, how do we ensure the fastest, least destructive transition to safe substitutes? The President has indicated a desire to move forward. Included in his budget is the proposal to capture profits from the production of CFCs, profits which would otherwise accrue to the industry responsible for causing the problem, simply from implementing the Protocol.

I commend him for his initiative to use the fee authority presently contained in the Clean Air Act. We need to ensure that continued production of CFCs is not rewarded and that our approach adequately facilitates the quick transition to safe substitutes.

Let me just briefly turn to the regulatory bills, which are also the subject of this hearing. Senator Chafee and I have long been deeply concerned about this issue, and it is my hope that we can jointly develop legislation which will ensure that these substances are used in a manner that minimizes release, maximizes recycling, and ensures proper disposal.

In addition, I believe that Congress needs to look closely at the development and increased use of safe CFC substitutes. We need to send a signal that the substitutes with ozone-depletion potential will not be allowed to grow in use until we are right back where we are today. We need to encourage the speedy development and production of those substitutes with very small ozone-depletion potential.

Senator Chafee and I have long supported a concept of limiting depletion potential. Depletion potential should be capped at a level 95 percent below 1986 levels. This type of policy would provide certainty for substitutes, yet still allow, by EPA estimate, the use of these substitutes to increase tenfold.

I want to welcome each of the witnesses here today. I look forward to your testimony and working with you to develop legislation to address these important issues.

Before turning to witnesses, I would like to call on the ranking member of the subcommittee, Senator Chafee, who has been a very strong and very effective proponent in limiting the use and production of ozone-depleting chemicals and materials.

Senator Chafee?

OPENING STATEMENT OF HON. JOHN H. CHAFEE, U.S. SENATOR FROM THE STATE OF RHODE ISLAND

Senator Chafee. Thank you very much, Mr. Chairman. I am glad that you are holding this hearing today, and I want to congratulate you on all the work you have done in connection with this subject.

There are just three brief points I would make, and I would hope our witnesses would consider these when they testify before us today.

First, there is the question of creating some sort of mechanism to recapture the price increases we are seeing on the chemicals that are covered by the Montreal Protocol. Obviously, as there is a reduced supply and the demand continues, the price goes up. And this is going to happen, obviously.

So the President's budget assumes it is going to happen, the budget resolution adopted by Congress assumes that is going to happen, and this committee has been instructed, as part of the reconciliation process, to come up with over $400 million, precisely the amount included in the budgets, as revenue from the CFC controls.

Now, if we do not set up a legislative program, then EPA or OMB will do it administratively, and if OMB has its way, the mechanism will not be a fee; it will be an auction. As far as I can tell, that would not be a success. Frankly, it might well be a disaster for the producers and most of the users of CFCs.

So my message is, to all who are involved with this, come to the table and work with us to craft, to the best of our abilities, the finest plan possible. If individuals or companies sit on the sidelines, or if you resist legislation, then you are going to quickly lose control.

Second, I am encouraged by the international progress and the movement to strengthen the Montreal Protocol. You and I, Mr. Chairman, as you mentioned, have been working for many years to eliminate these chemicals, so it is refreshing to see an international endorsement of that. But I think we ought to press ahead with legislation to control CFCs, halons, and other chemicals that destroy the ozone layer.

In addition to the phaseout, our bills include controls in the emissions. It is all well and good to have a phaseout on the production, but if this stuff is still being released, we are not making an awful lot of progress. So there ought to be measures included in any law for recapture and recycling and proper disposal of the CFCs that we currently have which have been produced and are in refrigerators or are in automobile air conditioners. And so I hope that we can work on that as we move ahead with S. 491.

My final point has to do with import restrictions. We have that in our bill. Controls on international trade were included to help U.S. industries. We do not want to clamp down on U.S. producers and forbid them to use, for instance, CFCs as solvents, but we also do not want imports of those chips that have been cleaned with CFC solvents.

A number of industries have told me that these controls will not work and may actually hurt them. Well, we want to work on that and see what we should do about it. I hope we can work it out successfully and that there can be a ban on such imports, but if not, we may have to drop that provision. So, those industries involved, come forward. We are going to do something on this, and we want your support or you are going to be left behind at the station.

Thank you very much, Mr. Chairman.

Senator **Baucus**. Thank you, Senator Chafee.

I would like to turn to a very, very able member of this committee from Connecticut, Senator Joe Lieberman, for a short statement.

OPENING STATEMENT OF HON. JOSEPH I. LIEBERMAN, U.S. SENATOR FROM THE STATE OF CONNECTICUT

Senator **Lieberman**. Thank you, Mr. Chairman.

I have a statement which I would ask to be included in the record, and if I may, I would like to make just three brief points.

This issue of depletion of the ozone layer dramatically makes the point that has come up over and over again in this committee, which is that environmental protection today is much more than a matter of natural resource protection, as important as that is; environmental protection is a matter of health protection.

We know with a reasonable degree of certainty now that the hole in the ozone layer, if we don't do something about it, is going to cause tens of thousands of cases of skin cancer, cataracts, assaults on human immune systems, and people are quite simply going to be sick who would not be sick were it not for this man-caused assault on the balance of the natural environment. So there is some personal urgency that we should approach this issue with.

Second, on a much more technical but important point—because sometimes the great issues come down to process and authority—I understand that the Office of Legal Counsel of the Department of Justice recently opined that the Administrator of EPA already has authority under the Clean Air Act to promulgate an auction system or a fee system to deal with CFCs. I reviewed the opinion, and I feel that it is sound. However, I know as a former attorney general that even sound opinions can be challenged in court, and it can be years before those challenges are resolved.

Given that fact, Mr. Chairman, I am convinced that a clear-cut legislative mandate at this time is not only the prudent course but the safest course. You, Mr. Chairman, and Senator Chafee deserve much credit for the introduction of just that kind of legislation which will deal with this problem, and I support it and the fee method set forth in your bill, S. 503.

Finally, in terms of the agenda of the administration and this committee, as indicated in the recent meeting in Helsinki, there is now emerging a worldwide environmental community of concern that holds tremendous hopes for at least uniting the varied peoples of the world on this concern, which we all share, if not on a whole range of other political concerns. Unfortunately, our own country has not been consistently at the forefront of this effort.

After what I consider to be a bold and correct decision by the administration to ban CFCs, the administration appears to have faltered, and I think it is time now for us in this committee, hopefully working with others in the Senate, clearly—certainly Senator Gore and Senator Leahy before us—and the administration to pick up the slack and move to the front of this global effort.

Our concern with the Clean Air Act, critical as it is, as much of a priority as it is for this committee and the administration, is no excuse for not dealing with the bigger and longer term issues of global warming and ozone depletion. I do not want to see us come to a point where we win one battle but we lose the long-term war.

That is why, Mr. Chairman, I appreciate very much your leadership, the convening of this hearing, and I look forward to hearing from the witnesses today.

[Senator Lieberman's statement follows:]

Opening Statement of Hon. Joseph I. Lieberman, U.S. Senator From the State of Connecticut

Mr. Chairman, let me first congratulate you for holding this hearing on chlorofluorocarbons (CFC's) at such a timely moment in view of what has been happening worldwide on this issue. It is an opportunity for this Committee under your guidance to take a position of real leadership.

At the recent international meeting on this subject in Helsinki, we saw the beginnings of a genuine world environmental community. Eighty countries there agreed that ozone depleting chemicals should be phased out. Starting with the Montreal Protocol in 1987, there has been real progress toward an international consensus to fight ozone layer depletion. The decisions now being discussed will affect all the nations of the world: their health, their economics, and the convenience and comfort of their people. This is a situation where there may well be short term pain to avoid a long term environmental peril.

Unfortunately our own country has not been consistently in the forefront of this effort. After a bold decision to ban CFC's by the end of the century, the Administration appears to have faltered. It is time now to take up the slack in our participation and move this global effort forward.

Cleaning up smog in our cities and preventing acid rain are vital immediate national concerns, but to focus on them to the exclusion of the ozone depletion and global warming issues may cause us to win the battle but lose the war. I admire the desire of my colleagues on this committee to grapple with all of these problems, by introducing the legislation we are discussing here today.

Let me now turn briefly to the legislation.

The Office of Legal Counsel of the Department of Justice recently ruled that the Administrator of EPA already has authority under the Clean Air Act to promulgate an auction system or rules for a quota with fees. I have reviewed their opinion and I feel that it is sound. However, I know as an ex-Attorney General that even sound opinions are often challenged in court and, it can be years before these challenges can be resolved. We do not have the luxury of time to resolve this issue. Given this fact, Mr. Chairman, I am convinced that a clear cut legislative mandate at this time is the prudent and safer course. You and Senator Chafee deserve much credit for the introduction of legislation to deal with this problem. Mr. Chairman, I support the fee method set forth in your bill S. 503 to regain the government generated windfall profits that will occur as the CFC supply gets scarce, and provide the funds for the needed research and development on greenhouse gases. Fees are a much more rational and equitable system than the auction system which I understand the Administration is considering.

The potential consequences of the depletion of the ozone layer surrounding our planet merits immediate attention. As we talk about costs and economic dislocations let's make sure we put *all* the costs on the table including the ultimate price of damage to the global aquatic food chain, the medical costs of increasing skin cancer and eye cataracts, and the potential crop losses. That is the full scope of the global environmental challenge we are confronting today.

Senator **Baucus**. Thank you very much, Senator.

I will now turn to Senator Jeffords from the State of Vermont.

OPENING STATEMENT OF HON. JAMES M. JEFFORDS, U.S. SENATOR FROM THE STATE OF VERMONT

Senator **Jeffords**. Thank you very much, Mr. Chairman.

I also want to commend you for holding this hearing and certainly want to welcome Senator Gore and Senator Leahy here. Senator Leahy and I are cosponsors on two bills in this regard. I look forward to hearing from them.

I just would like to make a couple of comments. Certainly there is widespread agreement both here and abroad that the Montreal Protocol just does not go far enough, and it is time for the United States to exert world leadership.

We must set the example for the world in this regard, and I hope this subcommittee will be in the forefront of that effort.

The Vermont Legislature last month approved, and the Governor just signed, one of the most innovative bills to date on the issue of CFCs. The Vermont law will prohibit, beginning with model year 1993, the sale of automobiles equipped with air conditioners using CFCs.

The law also requires that service stations that refill automobile air conditioners must install emissions recovery equipment. Finally, the law will prohibit sales of small-volume containers of CFC coolant.

Senator Leahy and I only introduced the bill yesterday. Thus, obviously, it is not before this committee at this particular time. However, I do hope that we can cover the legislation at a future hearing, and I am sure that some people, like the automobile industry, will have an interest in it.

I hope this proposal will be part of the comprehensive strategy to address the stratospheric ozone depletion. This is a challenge to Congress, the American people, and industry. We must move toward developing substitutes with less environmental risks. We did it with aerosols, we did it with chloroform, and I am confident that we can do the same with CFC-12 and other CFCs.

I am looking forward to these hearings, Mr. Chairman. Thank you.

Senator BAUCUS. Thank you, Senator Jeffords.

Senator CHAFEE. Mr. Chairman, I would just like to join in welcoming our two witnesses, both of whom have been active in this for some time. I know Senator Gore went to England to the conference that Prime Minister Margaret Thatcher had, so he has had a long interest in this and has gone to considerable efforts to advance this cause.

Senator BAUCUS. Thank you.

First let's hear from Senator Leahy, the chairman of the Senate Agriculture Committee, who also has been very active.

STATEMENT OF HON. PATRICK J. LEAHY, U.S. SENATOR FROM THE STATE OF VERMONT

Senator LEAHY. Thank you, Mr. Chairman, and I appreciate the courtesy of letting me go on first like this. As the chairman knows, I have a flight to catch, but I wanted very much to be here at least for a few minutes.

I wanted to commend you for holding this very important hearing and to commend the strong leadership that you and Senator Chafee have shown on the issue of banning CFCs.

In the past, our efforts to address ozone depletion have frequently been frustrated. The signing of the Montreal Protocol was an historic first step in controlling the ozone-depleting chemicals. But, as Senator Jeffords has just said, we all know it is just that, only a first step, and many of us, notably you, Mr. Chairman, and Senator Chafee, know that.

To protect the ozone layer, to reduce global warming, we have to go beyond the Montreal Protocol and ban CFCs. So I must admit I feel very good being in the company of strong and determined and demonstrated environmentalists, Mr. Chairman, like yourself and Senator Chafee, Senator Jeffords, Senator Lieberman, and my good friend Al Gore, who is sitting here at the table with me.

Now, in Vermont, the environment is not a partisan issue. In Vermont there are not any Republicans or Democrats when it comes to the environment. Senator Jeffords, Senator Stafford, governors past and present, Republicans and Democrats, all of us have a strong environmental record and dedication to the environment.

For Vermonters, when you use the phase, "I am an environmentalist," it is not a campaign slogan. It is a living commitment of all us, Republicans and Democrats alike. That is why one of the first acts this year that I did was to join with my good friend Jim Jeffords and introduce a bill which Senator Stafford worked so hard on last year. This bill calls for a total ban on CFCs.

Now, in our State, Mr. Chairman, environment is a leadership issue. The Vermont Legislature recently demonstrated this leadership on the issue of ozone depletion by banning cars which use CFCs in their auto air conditioners starting in 1993, and as Senator Jeffords has pointed out, it had strong bipartisan support.

But here in Washington, to keep up the momentum of Vermont's leadership, I am calling on the committee to enact this bill with its total ban on CFCs. It is time to move. I have been concerned about the depletion of the ozone layer since the early 1970s when scientists first started warning us of the hole over the Antarctic, and in the early days, it was a lonely battle. A hole in the ozone layer sounded like science fiction to a lot of disbelieving policymakers.

But I went down and met with those same scientists in Antarctica, and I was convinced by what they were showing, and I was convinced by the great cries of alarm that they were raising worldwide. We must not wait for absolute scientific proof before acting on problems that our common sense tells us demand action. I hope it does not take as long to persuade people in this Nation to take action on global warming.

No one taught me more about the global environment than my good friend Bob Stafford, the Senator from Vermont, former Governor, former distinguished chairman and later ranking minority member of this committee. He worked hard to alert us all to the dangers of continued abuse of the environment.

In one of a series of 16 excellent, insightful speeches he delivered on the floor last summer preparatory to his retirement from the Senate, Senator Stafford said, "The message is surely clear. The release of CFCs into the air is a threat to life on Earth. We must stop using CFCs."

Mr. Chairman, Bob Stafford is right, and I would hope the committee would approve legislation to eliminate CFCs. It is essential to the health of this planet. The schedule goes well beyond what was established in the landmark Montreal Protocol. But we have to.

Mr. Chairman, in your own bill, S. 503, you have addressed the critical issue of how to prevent windfall profits by firms selling CFCs during the phaseout period. You have an excellent proposal in R&D.

So, Mr. Chairman, I thank you again for the courtesy of allowing me to appear here. I would hope my whole statement could be made part of the record, and I look forward to working with my good friend Max Baucus, John Chafee and all the others on this legislation.

[Senator Leahy's statement follows:]

STATEMENT OF HON. PATRICK J. LEAHY, U.S. SENATOR FROM THE STATE OF VERMONT

Mr. Chairman, I would like to commend you for holding this very inportant hearing, and I thank you for inviting me to appear.

I also commend your strong leadership on the issue of banning CFCs. In the past, our efforts to address ozone depletion have frequently been frustrated. The signing of the Montreal Protocol was an historic first step in controlling the ozone depletion chemicals.

But many of us, notably you Mr. Chairman and the distinguished ranking minority member Mr. Chaffee, recognized that the Montreal Protocol was just that, a first step.

To protect the ozone layer and reduce global warming we must go beyond the Montreal Protocol and ban CFCs.

In Vermont, environment is not a partisan issue. In Vermont there are no Republicans or Democrats when it comes to the environment.

For Vermonters the phrase "I am an environmentalist" is not a campaign slogan, it is a living commitment.

That is why one of my first acts this year was to introduce the bill which Sen. Stafford worked on so hard last year. This bill calls for a total ban on CFCs.

In Vermont, Mr. Chairman, the environment is a leadership issue. The Vermont legislature recently demonstrated this leadership on the issue of Ozone depletion by banning cars which use CFC's in their auto air-conditiners starting in 1993. Vermont Legislator Curt McCormic, a long-time advocate for the environment in the State, showed foresight and leaderhip in introducing this bill in the Vermont House of Representatives.

Here in Washington, to keep up the momentum of Vermont's leadership I'm calling on this Committee to enact my bill with its total ban on CFSs. It's time to move.

I have been concerned about the depletion of the ozone layer since the early 1970's, when scientists first started warning us of the hole over the Antarctic. In the early days it was a lonely battle. A hole in the ozone layer sounded like science fiction to a lot of disbelieving policy-makers.

We must not wait for absolute scientific proof before acting on problems that our common sense tells us demand action.

I hope it doesn't take as long to persuade people to take action on global warming.

No one has taught me more about global environment than my good friend Bob Stafford. As a Senator from Vermont, and the former distinguished Chairman and later the ranking minority member of this committee, he worked hard to alert us all to the dangers of continued abuse of the environment.

In one of a series of sixteen excellent, insightful speeches he delivered on the floor last summer, Senator Stafford said "the message is surely clear—the release of CFC's into the air is a threat to life on Earth. We must stop using CFC's. . . ."

Mr. Chairman, Bob Stafford was right. I urge the Committee to approve this legislation to eliminate CFCs.

This phase-out is essential to the health of the planet. This schedule goes well beyond what was established in the landmark Montreal Protocol. But you know and I know, Mr. Chairman, that this is what we have to do.

S. 333 also calls for international cooperation. We need to move ahead promptly with a treaty that finishes the job started by the Montreal Protocol. It's important that we in the U.S. take the lead in enacting a CFC ban.

The Bush Administration nees some encouragement in this area. I know that this Committee and the Senate will make itself heard.

Mr. Chairman, in your own bill, S. 503, you have addressed the critical issue of how to prevent windfall profits by firms selling CFCs during the phase-out period, while at the same time insuring there are adequate funds for research and development.

Your proposal for a production and importation charge on Ozone-depletion chemicals and for using some of that income for an R & D fund makes a lot of sense, and I support your idea.

Mr. Chairman, I have one additional comment to make regarding the Vermont legislation banning cars using CFCs in air conditioners. Frequently the states have led the way in enacting prioneering environmental legislation.

Mr. Chairman, I ask you to turn a deaf ear to any who would urge that legislation from this Committee banning CFCs also pre-empt state legislative efforts.

As we consider CFC legislation, I hope the U.S. Senate will keep Vermont's leadership on CFC's in mind. We have come face to face with the dangers of CFC's. Vermont has made the kind of tough decision that needs to be made. We need to do the same.

Senator **Baucus**. Thank you very much, Senator.

The action of the State Vermont is particularly interesting, and I think the State should be commended for taking that action. It is very progressive.

Senator, do you wish to stay?

Senator **Leahy**. I apologize and beg the leave of my colleagues and my good friend Al Gore for leaving. I do have a flight to catch for a matter, I must admit, of a family nature and a family gathering that I would be terribly remiss if I missed.

Senator **Baucus**. Well, we wish you the very best.

Senator **Leahy**. Thank you.

Senator **Baucus**. Thank you, Senator, for your help.

We are honored to now have before us Senator Al Gore, who has been a very strong leading advocate for protecting the environment, specifically with respect to protecting the stratospheric ozone level over the Earth.

Senator Gore, why don't you proceed?

STATEMENT OF HON. ALBERT GORE, JR., U.S. SENATOR FROM THE STATE OF TENNESSEE

Senator **Gore**. Thank you very much, Mr. Chairman.

Thank you for your outstanding leadership on this and so many other environmental questions. And to the ranking Republican member of this subcommittee, Senator Chafee, thank you for your kind words, and I appreciate the opportunity I have had to work closely with you and have admired your leadership on these issues as well.

To Senator Lieberman, I am honored that the Gore-Lieberman bill, S. 201, was introduced on the very first day of this Congress and encompasses the first effort in this Congress to deal with the problem of CFCs. I remember when Senator Lieberman—then Candidate Lieberman—was arguing about the need to protect the environment.

And to Senator Jeffords, thank you for your leadership. We served together in the House on these questions.

Mr. Chairman, one of the reasons CFCs have been singled out for particular attention is, of course, that they are greenhouse gases as well as ozone-depleting substances. Indeed, many people are very surprised to learn that as much as 20 percent of the greenhouse effect is caused by these very same substances.

It is hard to imagine how a substance like this could be so comparable in its greenhouse-effect contribution to carbon dioxide, which occurs in much larger volumes. carbon dioxide is probably 40 to 50 percent of the cause of the greenhouse effect, and yet CFCs are 20 percent. Why? Because each CFX molecule has as much as 10,000 to 20,000 times the strength of a carbon dioxide molecule effect in producing the greenhouse effect.

At the same time, CFCs are responsible for virtually all of the depletion of the stratospheric ozone layer. And so as the world looks at the global environmental problems that we face, and looks at the prospects for solving these problems, we naturally must look first at the worst culprits and call for reducing those pollutents which seem most controllable.

Controlling CFCs is not going to be easy, but it is easier than virtually anything else that we are going to have to do. So we cannot fool around with it. We have to be firm and bold and strong and move on this question.

I have already mentioned the rule of CFCs in the greenhouse effect. But what comes from the depletion of the stratospheric ozone layer? The best-known effect is millions of additional cases of skin cancer, and millions of additional cases of cataracts.

But, as Senator Lieberman pointed out, an even more important problem is that stratospheric ozone depletion will lead to depression of the immune system of virtually all the living organisms. Other particularly dangerous impacts will be felt at the bottom of the food chain, where the smaller plankton species can be greatly affected by increases in ultraviolet radiation.

This committee has done yeoman's work on the clean air legislation, but there are cities throughout the United States that may not meet the ozone standard partly because—as the stratospheric ozone layer thins out—more ultraviolet radiation passing through to ground level could interact with the emissions of automobiles and other production processes, possibly elevating the concentrations of ground-level ozone.

There are, in other words, many important reasons to phase out CFCs and the other chemicals that deplete the stratospheric ozone layer.

As some have noted, the Montreal Protocol is a great step forward. But, as this committee has led the Congress in understanding, we would have to reduce the production of CFCs by almost 90 percent just to maintain the current level of damage to the ozone layer, and the Montreal Protocol—at best—will lead to a 35 percent reduction, and will not even do that if the loopholes are not closed.

Let me go quickly to the legislation. I mentioned S. 201, and I want to acknowledge my debt to Senator Stafford as well. I was an original cosponsor of his legislation last year, and I know that members of this committee staff who were deeply involved in drafting that bill are also at work in this Congress, and I am grateful to them as well.

Since then, I have elaborated on the provisions of S. 201 by introducing three new pieces of legislation, Mr. Chairman. The first, the Consumer Ozone Protection Act, has been referred to the Commerce Committee. I will not dwell on that here. But it would regulate, and in some cases ban, the sale of certain consumer products that contain these substances. It would regulate the servicing of automobile air conditioners. A huge amount of the release of ozone-depleting chemicals comes from sloppy and irresponsible handling of CFCs used in automobile air conditioners. It calls for the development of a Chlorofluorocarbon and Halon Reclamation Plan for the recapture and recycling of ozone-depleting substances.

The second bill, the Ozone Layer Conservation Act, is going to the Finance Committee. Congressman Stark over on the House side has introduced the same measure, with 59 cosponsors. I will submit for the record, Mr. Chairman, a comparison of the approach taken in that bill with the approach taken in your bill. Both of them establish a conservation trust fund. There is a little difference between a tax and a fee, and—not here but in a more appropriate way—I would like to argue the case for taking some of the best features of both of those bills, because I think there are strengths in both.

The third bill is the one that is coming to this Committee, and that is the Upper Ozone Chemicals Act. It calls for a 5-year phaseout of six specific substances that deplete the ozone layer: CFC–11 and CFC–12—those are the two worst; then CFC–113, halon 1211, halon 1301, and carbon tetrachloride, which was added after discussions with Robert Watson, who is going to be testifying later.

The bill then calls for a 10-year phaseout of other, somewhat less damaging chemicals. There are exceptions for medical and national security reasons, and I will be happy to elaborate for the record on that.

Now, there is a risk involved with the 5-year phaseout of the six most harmful ozone-depleting chemicals, and some will say that this timetable is too fast. I would urge this committee to consider the risk associated with not phasing them out. We are going to encounter risks whichever way we go.

I would argue very strongly that it is almost impossible to imagine a risk for the world greater than the one associated with continuing the current pattern of activity. I would much rather run the risk that one or more of the uses of these chemicals might not find a substitute in time, and might call for us to revisit the issue toward the end of the phaseout period.

Now, Mr. Chairman, I know that I have exceeded my time, and I appreciate not only your leadership but also your courtesy. I will supply additional material for the record. My staff and I have done extensive analyses of the other bills, all of which have very welcome elements, and we have a side-by-side comparison of each provision in these bills, if it might be of any help to the committee.

I look forward to working with you. Like Senator Leahy, I am much comforted by the fact that this committee has such strong bipartisan leadership and interest in these concerns, and I applaud you for having this hearing today.

[The side-by-side comparison referred to follows:]

SIDE-BY-SIDE COMPARISON OF SOME PROVISIONS CONTAINED IN S. 870, S. 871, and S. 872, TO COMPARABLE PROVISIONS IN S. 333, S.491, AND S.503

The following is a comparison of some major provisions contained in S. 870, S. 871, and S. 872, to comparable provisions contained in S. 333, S. 491, and S. 503.

1. Comparison of S. 870 to S. 333, S. 491, and S.503.

MOBILE AIR-CONDITIONERS

S. 870 begins regulating auto air conditioner servicing within eighteen months, to ensure that chlorofluorocarbons (CFCs) are recaptured and recycled, and not unnecessarily vented to the atmosphere. (About 30% of U.S. emissions of CFC-12 originate from auto air conditioners, and about three-quarters of those emissions occur during maintenance and recharging.) S. 870 also eliminates, within nine months, the sale of CFC-containing air conditioner recharge cannisters smaller than 30 pounds. Finally, S. 870 requires, within nine months, that servicers recharging auto air conditioners with CFC-containing fluids first test the system for leaks and repair those leaks before recharging.

S. 333, S. 491, and S. 503 do not have comparable provisions.

FIRE EXTINGUISHERS FOR CONSUMER APPLICATIONS

S. 870 bans, within nine months, the sale and distribution of fire extinguishers containing halons or other ozone-depleting substances for routine consumer applications, except in cases where such fire extinguishers are required by federal law.

S. 333, S. 491, and S. 503 do not have comparable provisions.

NONESSENTIAL CONSUMER PRODUCTS CONTAINING CHLOROFLUOROCARBONS

S. 870 bans, within nine months, the sale and distribution of non-essential consumer products that are capable of releasing ozone-depleting substances into the atmosphere. These products include chlorofluorocarbon-containing plastic party streamers and noise horns, chlorofluorocarbon-containing cleaning fluids for electronic and photographic equipment, and others.

S. 333, S. 491, and S. 503 do not have comparable provisions.

LABELING REQUIREMENTS

S. 870 requires the labeling of consumer products that contain, are produced with, or are produced from an ozone-depleting substance. These labels would warn the purchaser that the product's contents or manufacturing process pose a danger to the stratospheric ozone layer, and that depletion of the ozone layer could lead to increased risk of skin cancer and damage to natural systems, including food production.

The labeling provisions in S. 333 and S. 491 are similar.

CHLOROFLUOROCARBON AND HALON RECLAMATION PLAN

S. 870 calls for the development of a plan for ensuring the most effective means of achieving widespread reclamation, recycling, or regulated disposal of ozone-depleting substances.

S. 491 requires the development of regulations establishing standards for the recapture, recycling, and safe disposal of ozone-depleting substances.

2. Comparison of S. 871 to S. 503.

MANUFACTURES' EXCISE TAX ON CHEMICALS THAT DEPLETE THE OZONE LAYER

S. 871 amends the Internal Revenue Code of 1986 to impose a manufacturers' excise tax on certain chemicals that deplete the stratospheric ozone layer. The amount of the tax is adjusted for each chemical, depending on the chemical's potential for depleting stratospheric ozone.

The tax imposed by S. 871 can be passed on to purchasers of ozone-depleting chemicals, raising the price of the chemicals; thus, market forces are used to decrease the demand for the more dangerous chemicals. The increased price due to the tax effectively "internalizes" the environmental costs into the costs of the product (similar to the logic of those who would call for a carbon dioxide tax to reduce greenhouse gas emissions). If the price is not raised, no incentive is provided for consumers to demand the less-dangerous chemicals. The higher price also makes the environmentally safer substitutes more economically competitive with some traditionally very-low-cost ozone-depleting chemicals, and will eventually provide users with the incentive to recapture and recycle the most dangerous ozone-depleting chemicals.

The tax does not provide for adjustment to capture windfall profits. Companies are expected to use such profits -- to the extent that they occur -- in order to finance research and development of alternatives. Because the traditional products are being phased out, the companies should require those revenues to finance a substantial research and development effort.

S. 503 imposes a fee on the production and importation of ozone-depleting chemicals. An ozone depletion potential is assigned to each of the substances, and a fee is set based on the chemical's potential for depleting stratospheric ozone.

The fee imposed by S. 503 is to be absorbed by the chemical manufacturers, keeping the price of ozone-depleting chemicals stable. The fee is adjustable, to capture any windfall profits that producers realize as supplies drop during the phaseout period, and thus prevent the manufacturers from inflating the price of the chemicals being phased out.

OZONE LAYER CONSERVATION TRUST FUND

S. 871 provides for annually putting one-half of the revenues from the manufacturers' excise tax into an Ozone Layer Conservation Trust Fund. This would equal $200 million in the first year, rising to $750 million in the fifth year; the remainder of revenues from the manufacturers' excise tax would go to the Treasury. Expenditures from the Trust Fund would provide for government-industry cooperation in research, development, and market incentives for non-ozone-depleting chemical and technological alternatives to ozone-depleting substances. In addition, the federal government would investigate the means by which it might assist United States manufacturers of such technological alternatives in exporting the alternatives for applications in developing and developed countries. S. 871 also incorporates several provisions modeled on past goverment-industry cooperative efforts to build new industries, such as block federal purchases of new technologies meeting specified performance standards.

S. 503 provides for annually putting up up to $100 million of the fee revenues into a trust fund to provide grants to producers and users for developing substitutes and alternatives to products now manufactured by ozone-depleting chemicals, with the rest going to the Treasury. S. 503 does not provide for the creation of markets for alternative technologies, but instead focuses on providing funding for research. Thirty percent of the trust funds are dedicated to funding research into substitutes for ozone-depleting chemicals and, 70% to support research into alternative products that are produced without ozone-depleting chemicals.

By putting the tax and fee revenues into a trust fund, both S. 871 and S. 503 ensure that a portion of the funds collected from the sale of ozone-depleting substances are used to support efforts for finding alternatives to technologies based on these substances.

3. Comparison of S. 872 to S. 333 and S. 491.

LISTING OF REGULATED SUBSTANCES

S. 872 requires the Administrator of the Environmental Protection Agency to publish lists of manufactured substances that are known or may reasonably be anticipated to cause or contribute to ozone depletion in the upper atmosphere. S. 333 and S. 491 have similar provisions, with some differences in the particular compounds to be included on each list. Following is a summary of these differences:

Compound	S. 872	S. 333	S. 491
CFC-11	yes	yes	yes
CFC-12	yes	yes	yes
CFC-22	yes	yes	yes
CFC-113	yes	yes	yes
CFC-114	yes	yes	yes
CFC-115	yes	yes	yes
CFC-123	no	no	yes
CFC-124	no	no	yes
CFC-125	no	no	yes
CFC-141	no	no	yes
CFC-142	no	no	yes
methyl chloroform	yes	yes	yes
methylene chloride	yes	yes	yes
carbon tetrachloride	yes	yes	yes
halon-1211	yes	yes	yes
halon-1301	yes	yes	yes
halon-2402	no	no	yes

Although S. 491 regulates a number of substances, only those noted below are actually phased out.

S. 872, S. 333, and S. 491 require the Administrator of the Environmental Protection Agency to assign an ozone depletion factor to each listed substance. The ozone-depletion factor is a numerical value representing the ozone depletion potential of each manufactured substance, on a mass basis, as compared to CFC-11.

PRODUCTION PHASEOUT

S. 872, S. 333, and S. 491 all require the phaseout of the production of ozone-depleting substances, but differ in the schedule for the phaseout and the compounds to be eliminated. Following is a summary of the compounds to be phased out and the schedule for doing so in each bill:

Compound	S. 872	S. 333	S. 491
CFC-11	5 years	1996	1997
CFC-12	5 years	1996	1997
CFC-22	10 years	2000	n/a
CFC-113	5 years	1996	1997
CFC-114	10 years	2000	1997
CFC-115	10 years	2000	1997
methyl chloroform	10 years	1996	1997
methylene chloride	10 years	2000	n/a
carbon tetrachloride	5 years	2000	n/a
halon-1211	5 years	1996	1997
halon-1301	5 years	1996	1997
halon-2402	n/a	n/a	1997

MANUFACTURE AND DISPOSAL

S. 872 and S. 333 prohibit the manufacture, distribution, and use of any ozone-depleting substance except in a totally enclosed manner, and require that the substance be disposed of in a way that ensures that the substance will not be released to the environment. They also require that ozone-depleting substances be removed from appliances, machines, or other goods before those goods are disposed of.

S. 491 requires the establishment of standards and requirements for the use of ozone-depleting substances and prohibits the use, release, or disposal of any ozone-depleting substance in a fashion that permits the release of the substance to the atmosphere.

LIMITATION ON OZONE DEPLETION POTENTIAL

S. 872, S. 333, and S. 491 place limits on the total ozone depletion potential of the substances produced by any person. This limit on total ozone depletion potential is gradually lowered to zero within ten years after enactment in the case of S. 872, and by 2000 in the case of S. 333. S. 491 requires a 95 percent reduction in the total ozone depletion potential by 1997.

PRODUCTION PHASE-OUT EXCEPTION FOR NATIONAL SECURITY

S. 872 and S. 333 allow the production and use of halon-1211 and halon-1301 as may be necessary to protect the national security interests of the United States. S. 491 extends this exception to halon-2402.

CERTIFICATION OF EQUIVALENT PROGRAMS

S. 872, S. 333, and S. 491 all require certification that foreign countries have equivalent phaseout programs in place before allowing products that contain or are manufactured with ozone-depleting substances to be imported into the United States.

SAFE ALTERNATIVES POLICY

S. 872 establishes the policy that the ozone-depleting substances to be phased out will be replaced, to the maximum extent possible, by chemicals, product substitutes, or alternative manufacturing processes that reduce overall risks to public health and the environment. It also calls on the Environmental Protection Agency to review and report on the alternatives being considered, and assess their risks to public health and the environment. The requirement of such an assessment assures that alternatives to ozone-depleting substances are not more risky to human health and the environment than the substances they are replacing.

S. 333 and S. 491 do not have comparable provisions.

Senator **Baucus**. Thank you very much, Senator, and you are also to be commended for the work you have undertaken substantively, as well as traveling to different parts of the globe to attend conferences and to help bring the American message and also to learn the actions of other countries in order to develop a comprehensive approach, and I very much appreciate your actions.

Senator Chafee.

Senator **Chafee**. Two things. One, Senator Gore, I would appreciate seeing that side-by-side comparison. That would be helpful.

Two, I think the point you made is a very good one, that five achievements would result from our actions, but I think, particularly, we want to stress not only that we are dealing with the CFCs, we are dealing with the ozone layer, but we are also dealing with global warming, which is the other great international concern of this committee, and I think it is important to keep that before us. Twenty percent, I think, is a standard figure that you and Dr. Rowland uses, Dr. Watson, too. So thank you very much for bringing that to us.

Senator **Gore**. Thank you, Senator Chafee.

Senator **Baucus**. Senator Gore also made another point. That is that depletion of the stratospheric ozone also has an effect of causing more of a smog problem as we address the Clean Air Act, and it is a very good point; that is, the interaction of hydrocarbons and nitrogen oxides tends to be the major cause of lower atmosphere ozone, smog, somewhat caused also by the CFCs, which reduce the upper atmosphere ozone. It gets pretty complicated, but it is an additional point; it is a very valid point as we address the passage of the Clean Air Act.

Senator **Gore**. Mr. Chairman, it is hard for the scientists to quantify the extra low ozone. I wish they would call that "lozone" instead of using the same word for both, because it does confuse people. Maybe we could call that lozone.

But, anyway, that may increase lower ozone concentrations, and there are a lot of cities where that may make the difference as to whether they can comply with Clean Air laws or not.

Senator **Baucus**. Senator Lieberman.

Senator **Lieberman**. I have no questions, just to thank Senator Gore for his leadership and his work. It is beyond leadership; you are really into this substantively. I also want to tell you how pleased that I was, on the first day that I became a Senator, to sign onto your bill. Thanks for coming this morning.

Senator **Gore**. Well, the Gore-Lieberman bill does attack this and global warming, and I appreciate your help.

Senator **Baucus**. Thank you, Senator.

Senator **Gore**. Thank you very much.

Senator **Baucus**. Senator Jeffords.

Senator **Jeffords**. Thank you, Senator Gore, I have read your bill, and I appreciate the tremendous effort that has gone into it and look forward to working with you on it. There are some strong similarities in what Senator Leahy and I introduced yesterday, and the one before, so I know, all working together, we are going to make some progress. It is a pleasure to work with you.

Senator **Gore**. I was pleased to be an original cosponsor with you and Senator Leahy and Senator Kerry on that bill, which came out of the Vermont Legislature's initiative, yesterday.

Senator **Jeffords**. Thank you.

Thank you, Mr. Chairman.

Senator **Baucus**. Thank you, Senator.

Our next witness will be Dr. Robert Watson with the National Aeronautics and Space Administration. Dr. Watson has appeared before this and other committees many times, and each time he appears, he brings to us an immense amount of new information not only about ozone but global warming, the interaction of chemicals, and the chemistry of the atmosphere as we try to make this a safer environment and a safer world.

Dr. Watson, again we are very honored to have you here and look forward to what you have to say at this hearing.

I understand that, to some degree, you are going to explain the results of substitutes and the effect substitutes might have on stratospheric ozone depletion as well as the greenhouse effect.

STATEMENT OF DR. ROBERT WATSON, NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

Dr. **Watson**. Thank you, Mr. Chairman, members of the subcommittee.

Obviously, it is an honor to be here again, as usual.

What I would like to report on——

Senator **Baucus**. Before you begin, Dr. Watson, I would like to also have EPA Administrator, Mr. Rosenberg, come up. Would you please come up, Mr. Rosenberg, and I will have the two of you together as a panel, and that way we can perhaps get a little interaction here.

I am a believer in the John Locke marketplace-of-ideas principle; that is, the more discussion there is, the more likely it is we are going to get to the truth.

Dr. Watson?

Dr. **Watson**. Thank you, Mr. Chairman.

What I would like to report on today is some provisional results from an international workshop to look at the environmental acceptability of the substitutes. I think it is a given now that the fully halogenated compounds will, indeed, be phased out worldwide. A key question now is, are the substitutes that are being thought of by industry any safer than the molecules we are currently thinking of phasing out?

This effort, under the name of AFEAS, Alternative Fluorocarbon Environmental Acceptability Study, was indeed started by industry, by the chemical industry, the international chemical industry. It pulled upon the world's best scientific leaders to do an analysis of the environmental acceptability of the substitutes.

I was asked to chair this meeting, which took place only 2 days ago, and I have now co-opted the process, and it will now be an integral part of the International Ozone Assessment that is being done under the auspices of WMO in Munich, which I am chairing.

Now, we studied the environmental acceptability of over 20 chlorine- and fluorine-containing compounds, and in particular, we focused on the eight compounds that the international producers have proposed as potential substitutes: fluorocarbon-22, 123, 124, 125, 134a, 141b, 142b, and 152a.

Senator **Chafee**. Could you list those again, Dr. Watson, please?

Dr. **Watson**. Sure. That was 22, 123, 124, 125, 141b, 142c, 134a, and 152a. Now, five of these are HCFCs; that is to say, they contain both hydrogen and chlorine, and so they indeed have the potential for ozone depletion in the stratosphere as they still contain chlorine. Three of them are just HFCs; that is to say, they contain no chlorine, but they do include fluorine.

All eight compounds have the potential for global warming; therefore, we need a careful analysis of these gases. To look at this, we wanted to understand, could these chemicals have impacts on tropospheric ozone, stratospheric ozone? Would they affect the climate? And, also, would they or their degradation products, once they break down in the atmosphere, have any biological or health effects? Quite crucial, in my opinion.

The prime loss of these molecules in the atmosphere is reaction with the hydroxyl radical. Most of these gases are removed in the troposphere. We looked at the chemical kinetics from the laboratory. Most of it looks quite good. We feel we know that loss mechanism to about 25 percent. So the lifetimes compared to, say, fluorocarbon-11 as a standard are known within about 25 percent based on laboratory data.

Two of the molecules also degrade by ultraviolet absorption in the stratosphere. We feel we know that to about 20 percent. So the loss mechanisms are reasonably well defined.

Now, the question is, how do they degrade in the atmosphere? Most of them are degraded in the troposphere. The key question is, do any of those byproducts themselves of the degradation, are they greenhouse warming gases? Could the chlorine compounds that we evolve out of the degradation, could they reach the stratosphere and cause ozone depletion? Or, as I said earlier, are there any toxic byproducts?

One of the problems is, there is almost no experimental data at all, almost none. The scientific base is very poor on direct measurements of the degradation mechanism. However, there is a wealth of data on similar chemicals, just hydrogen-containing chemicals, the alkyl species.

Based on our analogies, we believe we have some understanding of the degradation mechanisms, but we have to say quite categorically, we need more research to feel comforted in our understanding. At first sight—and I have to stress, at first sight—it does not look like the degradation molecules will have chlorine in them reaching the stratosphere. We believe, even though there are some degradation molecules that are formed, they are soluble in water.

Now, again, I have to stress that the solubility data is very poor. So our best guess is that very few of these compounds will reach the stratosphere and have adverse effects on the ozone. But I must stress quite seriously that logic and prudence would suggest we need more research before we can give these degradation products a clean bill of health. That is our best estimate at the moment, but there must be concern.

Given that the main loss of these compounds is in the troposphere with reaction with the hydroxyl radical, we have to decide how well could we predict the hydroxyl radical concentration in the troposphere. It appears we know it of the order of 50 percent.

So, overall, we know the rate of loss of these chemicals to of the order of 50 percent or so. However, again, there is significant scientific uncertainty. I say 50 percent, but in many respects our understanding of tropospheric chemistry is quite poor compared to our understanding of stratospheric chemistry.

The final product of the review, which will be finished under the UNEP WHO auspices, will be by mid-August of this year. I am sure what we will state is that there are many scientific uncertainties, but we will give our best estimates of what will happen. We will look at the ozone-depleting potentials of these chemicals, and we will look at the greenhouse warming potential, but we will do it in two ways.

What you are most familiar with are what we call the equilibrium greenhouse warming potentials, equilibrium ozone-depleting potentials, and what you have heard is that many of these substitutes have ODPs of less than .1 compared to fluorocarbon-11; in fact some are only .02, quite safe; and the greenhouse warming potential only a tenth of 11 or 12.

So, in the long term, these substitutes are much safer, than fluorocarbons 11 and 12 and 113, but in the short term, the transient response, they are not much better. Over the next 10 or 20 years, you will not see a great benefit from going from fluorocarbon-11 or fluorocarbon-12 to fluorocarbon-22 or some of the substitutes. In the long term, there is benefit; in the short term, there is not as much benefit as you might imagine.

All of these are provisional findings. I don't think they will change substantially. The findings will be reviewed by the international scientific community. There is a workshop in Switzerland in one month's time.

My bottom line is, at the first sight, these gases look to be a significant improvement over the gases in the Montreal Protocol. There are significant scientific uncertainties that need to be resolved. Prudence would suggest more research needs to be done before these chemicals are given a complete clean bill of health.

Thank you.

Senator Baucus. Thank you very much, Dr. Watson.

Mr. Rosenberg.

STATEMENT OF WILLIAM G. ROSENBERG, ASSISTANT ADMINISTRATOR FOR AIR AND RADIATION, ENVIRONMENTAL PROTECTION AGENCY, ACCOMPANIED BY EILEEN CLAUSSEN, DIRECTOR, OFFICE OF ATMOSPHERIC AND INDOOR AIR PROGRAMS, EPA

Mr. Rosenberg. Thank you, Senator Baucus.

It is a pleasure to be here today. Senator Chafee, Senator Lieberman, Senator Graham. I think Senator Jeffords is not here now.

Senator Chafee. I think this is your first appearance in your new role.

Mr. Rosenberg. That is correct, sir.

Senator CHAFEE. We are delighted you are here.

Mr. ROSENBERG. I am pleased to be here to testify today. I would like to introduce my colleague, Eileen Claussen, who is the director of the Office of Atmospheric and Indoor Air Programs at the EPA, and it is under her jurisdiction that the EPA regulatory program to implement the Montreal Protocol is being managed.

Before I begin, let me say that while I am new to this issue, I know that you and other members of this committee have played a very active and leadership role over the last several years to support the Government's efforts to effectively address this issue, and I want to work with you. I want to thank you for your past support and pledge to continue to work together on this critical environmental issue.

As you well know, we have come a long way in a short time in our efforts to protect the ozone layer. The Montreal Protocol was agreed to in September 1987 after less than 12 months of intense negotiations. Nations quickly acted to ratify the agreement, and the target date for entry into force of January 1 of this year was achieved. We now have 37 nations and the European Community as parties which represent close to 90 percent of current global consumption.

Yet, at the same time the political processes moved quickly forward, new scientific advances have shown increasing concerns that the risk of depletion may be greater than we had previously thought and that more needs to be done. President Bush has quickly acted in response to this evidence and, in early May, announced that the United States will support modifying the Protocol to call for a complete phaseout of CFCs and halons by the end of this century, assuming safe substitutes are available. We are now actively engaged in efforts through the Protocol process to implement this position.

Just 2 weeks ago, the U.S. delegation returned from the first official meetings of the Vienna Convention and Montreal Protocol. The Helsinki meetings accomplished several things. First, the four assessments on economics, technology, scientific and atmospheric issues were formalized, and a schedule calling for their completion by August of this year was agreed to.

Second, the governments at the meeting adopted by consensus a non-binding resolution calling for a complete phaseout of CFCs as soon as possible or by the year 2000 at the latest. The declaration also calls for a phaseout of halons and controls on other significant ozone-depleting chemicals. It is important to note that this declaration was widely supported by all 80 nations at the meeting, including Japan and the Soviets, two key nations that heretofore had not publicly voiced their support for a phaseout.

Third, considerable discussion focused on the need to provide technical and financial support to developing nations to support their efforts to phase out CFCs. While these nations fully recognize and accept the need for a global solution to protecting the ozone layer, they voiced concerns that the problem was primarily created by CFCs used by the developed nations and that these nations should aid developing nations in finding solutions which are compatible with continued economic growth in the developing world.

The parties agreed to establish a working group that will explore possible mechanisms for achieving this goal.

And, fourth, the meeting focused on the importance of also controlling other chlorinated compounds. This possible need to control methyl chloroform and carbon tetrachloride was reflected in many of the opening statements made by heads of delegations and was reflected in the declaration.

The United States contributed to this discussion with a technical presentation which showed the effects of reducing stratospheric chlorine levels of different measures to control the remaining CFCs, methyl chloroform, and carbon tetrachloride, and the partially halogenated CFCs or HCFCs.

Eileen Claussen, who represented EPA and who gave this presentation in Helsinki, will provide us with a short version this morning immediately following my remarks. I commend this very important presentation to the committee.

Let me now turn to the legislative proposals before the committee and address each of those and discuss these very briefly in light of the progress being made internationally. I would like to touch on three of the key issues addressed in these bills.

Several would require the United States to unilaterally phase out CFCs and halons somewhere around the middle of the next decade. As we have stated many times before this committee, we believe that the unilateral reductions in CFCs and halons would not be an effective means of protecting the ozone layer and that any additional reductions should occur through the Protocol on a multilateral basis.

Moreover, we believe that a phaseout by the year 2000 is feasible but very ambitious. Certainly Dr. Watson's concerns on the scientific evidence and the need to undertake substitutes in a safe manner is a major challenge.

Based on our current assessment of CFC alternatives, we do not believe that an accelerated phaseout is appropriate. As a result, we cannot support the provisions which call for either a faster phaseout or one that requires unilateral action.

Several bills also require technological controls, particularly mandatory recycling and recovery. The regulatory approach that has been adopted relies on limits on the production of CFCs and halons. EPA believes that, as these limits take hold, the prices for these chemicals will increase, thus creating a greater economic incentive for recycling.

We stated in an ANPRM recently issued that we intend to monitor the voluntary adoption of recycling and would determine in the future if Federal regulations are necessary. We concur with the prior statements that EPA has the authority under section 157(b) of the Clean Air Act to promulgate such regulations if it is determined that they are needed.

Several bills contain provisions establishing a tax on CFCs and halons. EPA issued an Advance Notice of Proposed Rulemaking in August 1988 in which it was stated that we were concerned that our allocation rule, by restricting the supply of these chemicals, would create windfalls for the five CFC producers and that such windfalls might have the unintended effect of slowing the rate at which CFC substitutes were introduced.

EPA discussed in the ANPRM collecting any such windfalls either through an auction or by adding a fee to the existing allocation system. We also sought public comment on whether EPA had the legislative authority under existing statutes or whether new legislation would be necessary.

While the administration is still debating whether to use the mechanism of a fee or an auction, we have determined, based on a legal opinion by the Department of Justice, that we can regulate using either of these two approaches under section 157[b] of the Clean Air Act. Thus, once the issue of fees or auctions is finally resolved, we intend to move forward and issue a proposed and final regulation.

While many other issues are covered by these bills, I hope I have touched on the ones of most immediate concern to the committee. I would be happy, following Ms. Claussen's presentation, to answer any questions on these or any other issues you may have.

Senator BAUCUS. Thank you, Mr. Rosenberg.

Let's now turn to that presentation. Ms. Claussen, why don't you proceed?

Ms. CLAUSSEN. All right.

This is a presentation that I gave on behalf of the United States at the Helsinki meeting. We think it is very important and lays out some very important issues on how you control, how fast you control, and what you control. On the other hand, it does not look at some other issues that we also think are important, like the toxicity of the substitutes, the greenhouse potential of the substitutes, the energy efficiency of the substitutes.

Let me just cover a couple of the important concepts that we use on these charts so that you will understand exactly how we are proceeding here. We refer to the term CLX, which is stratospheric concentrations of chlorine. We talk some here about the HCFC substitution rate, which is the extent to which HCFCs, as opposed to other chemicals, replace CFCs.

We talk quite a bit about the average ozone-depleting potential of the substitutes, which is really the extent to which the HCFCs with different ozone-depletion potentials will be used.

And, finally, let me say that we do not consider halons in this analysis because their primary issue of concern is bromine, and we are talking here about chlorine levels.

We are going to show a series of charts with a vertical axis that looks at parts per billion of chlorine in the stratosphere and then, along the horizontal axis, gives you a time line.

I think there are a couple of important things in this chart. The first is that there is a natural level of chlorine in the stratosphere of about 0.7 parts per billion. We are able to calculate a pre-Antarctic ozone hole CLX level which is at about 2 parts per billion, and we know that the 1985 CLX level was 2.7 parts per billion.

Now, we are talking here about starting at 0.7—you can see that on the vertical axis—and moving up to 2.7 in 1985. I think this raises the question about whether you stabilize the risk where we are today at 2.7, whether you reduce it and go back to where we were, or whether you continue, of course, to increase it.

One other point on this chart, and that is that we do not talk here in terms of ozone depletion; we are talking here about CLX levels, because we have never been able to make a very good connection between levels of chlorine in the stratosphere and ozone depletion, so we are using CLX levels as a surrogate.

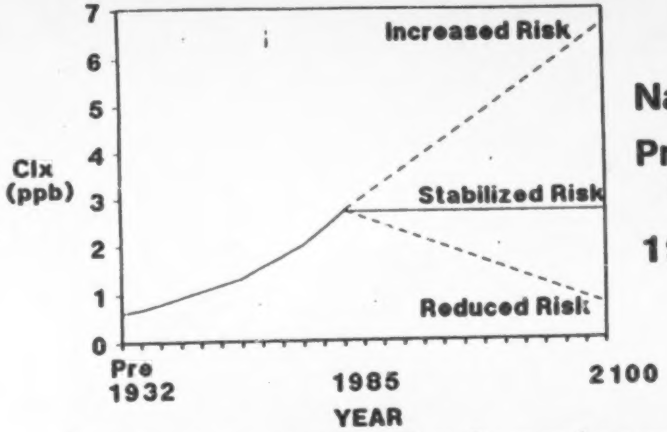
Senator BAUCUS. And CLX is again natural——

Ms. CLAUSSEN. Chlorine in the stratosphere.

Senator BAUCUS. Thank you.

DEFINITION OF Clx

- Charts show increases in Clx in the stratosphere



Natural Clx Level: 0.7 ppb

Pre-Antarctic Ozone Hole Clx level: ~2 ppb

1985 Clx level: 2.7 ppb

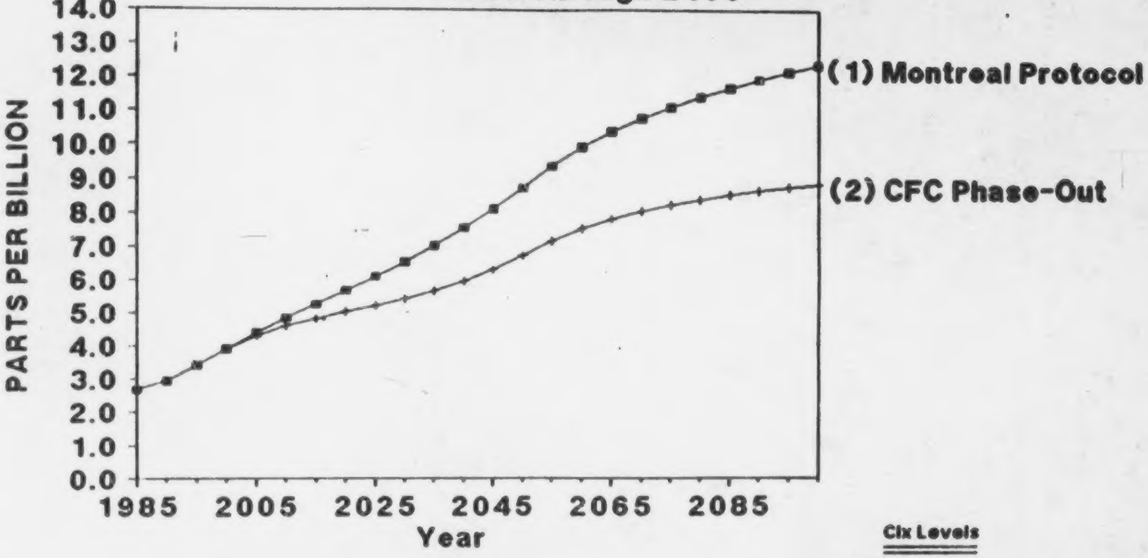
- Clx is a surrogate for atmospheric risk
  - current atmospheric models do not adequately represent recent polar or northern mid-latitude ozone depletion
  - science community is working to improve models, but given the complexities, we are likely to have to rely (at least in part) on Clx for some time

Ms. **Claussen**. The first chart here is going to be similar to all the ones that follow, so let me just tell you what the scales are. We are going from zero to 14 parts per billion on the vertical axis, starting, as you can see, at 2.7, which is where we are today. On the bottom there, we are going from 1985 up to 2100 because, since these are long-lived gases, we think it is useful to look over a 100-year period.

Now, the first line here shows the Montreal Protocol as it currently has been negotiated, and I think you can see there that we are going from, in this case, 2.7 parts per billion in 1985 all the way up to 12.5 parts per billion by 2100, and that is under the existing Montreal Protocol, which of course allows for that 50 percent reduction in the CFCs.

EFFECT OF CFC PHASE-OUT

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels	
	Max (through 2100)	2075
(1) Montreal Protocol Reductions	12.4	11.1
(2) 2000 Phase-Out of Fully Halogenated CFCs	8.9	8.2

Assumptions:

- o 100% Global Participation
- o No Controls on Baseline Methyl Chloroform or HCFC-22
- o No HCFC Substitution
- o No Controls on Carbon Tetrachloride Except Use as CFC Feedstock

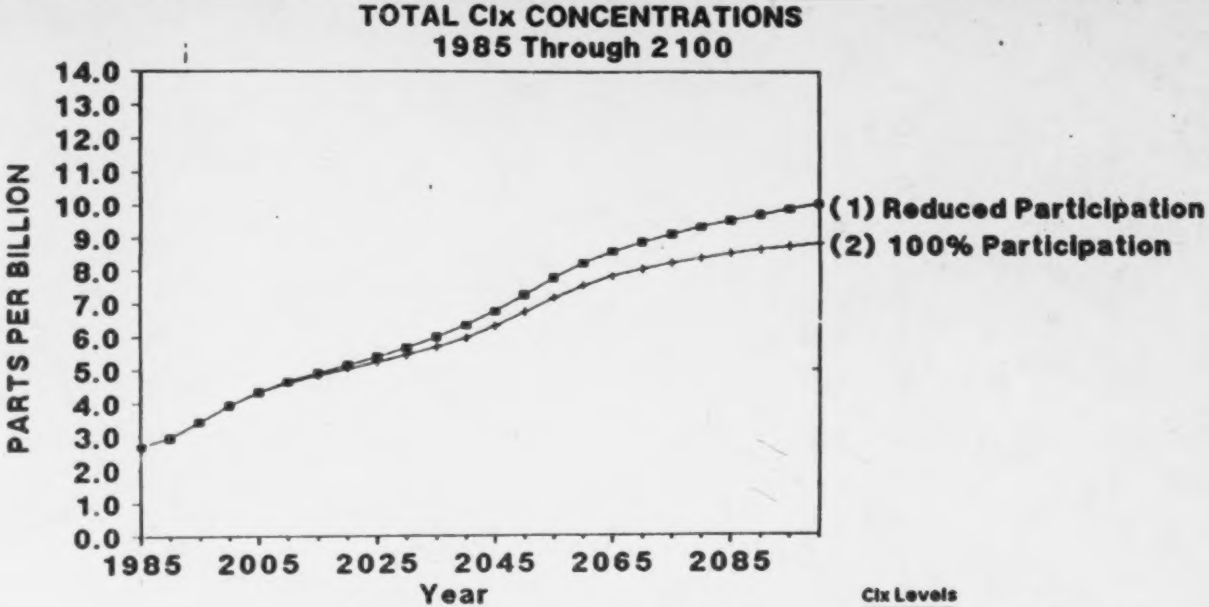
Ms. **Claussen.** The second line here, number 2, shows the CFC phaseout. This is what you would accomplish in terms of stratospheric chlorine levels if you phased out the CFCs, which of course is the position that we have taken and that I believe you, Senator Baucus and Senator Chafee and others, feel that of course we need to do. So you are gaining here about 3 parts per billion in terms of stratospheric chlorine levels, but you are still far above where you are in 1985, which is at 2.7 parts per billion.

Before moving to the next chart, let me just tell you some of the assumptions that we made here, because I think you will see that we are very conservative in how we have done this analysis. For one thing, we are assuming here that 100 percent of the world participates in the Montreal Protocol, which I believe is an optimistic assumption. We are also assuming that there are no controls on baseline methyl chloroform and HCFC-22 uses. In other words, we are assuming that those will continue.

We assume in this chart no substitution of the HCFCs. And lastly, we are assuming here no controls on carbon tetrachloride except in its use as a CFC feedstock, because as the CFCs are eliminated, carbon tetrachloride use as a feedstock would be eliminated.

We did some sensitivity on what would happen if not everyone in the world participated, as we had assumed on the first chart. And so we look here at the difference between 100 percent global participation, which is the lower line, and 100 percent of the developed world and 65 percent of the developing nations in the higher line. You see there a difference of about 1 part per billion, which does not start particularly early.

IMPORTANCE OF INTERNATIONAL PARTICIPATION



	Clx Levels	
	Max	2075
(1) Participation -- 100% Developed Nations; 65% Developing Nations	10.0	9.1
(2) 100% Global Participation	8.9	8.2

Assumptions:

- o 2000 Phase-Out of Fully Halogenated CFCs
- o No Controls on Baseline Methyl Chloroform or HCFC-22
- o No HCFC Substitution
- o No Controls on Carbon Tetrachloride Except Use as CFC Feedstock

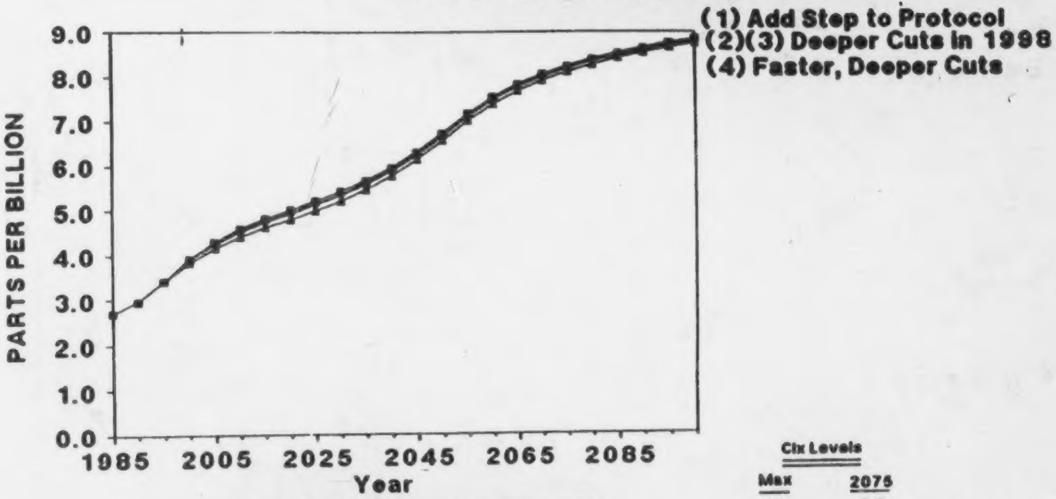
Ms. CLAUSSEN. In other words, were they not to join right away, the problem would not be so great, but were they not to join at all, and you look out over the 100-year time frame, I think you will see that that, too, is quite significant.

We look here at the issue of speeding up the reductions before you get to a 2000 phaseout. Let me just point out one thing here, and that is that we have used a different scale. We go from zero to 9 parts per billion on the vertical axis because the reality is that were you to use the 14 parts per billion, you would be able to see no difference at all.

What we are talking about here in four different scenarios is the first one, which is the existing protocol with a 2000 phaseout at the end, and then three different ones which speed it up some, either 85 percent achieved by 1998, 95 percent achieved by 1998, or one where you would have a 50 percent reduction in 1993.

EFFECT OF INTERIM REDUCTIONS

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels	
	Max	2075
(1) 20% Reduction in 1993; 50% Reduction in 1998	8.9	8.2
(2) 20% Reduction in 1993; 65% Reduction in 1998	8.8	8.2
(3) 20% Reduction in 1993; 95% Reduction in 1998	8.8	8.2
(4) 50% Reduction in 1993; 90% Reduction in 1998	8.8	8.1

Assumptions:
- 2000 Phase-Out of Fully Halogenated CFCs
- 100% Global Participation
- No Controls on Baseline Methyl Chloroform or HCFC-22
- No HCFC Substitution
- No Controls on Carbon Tetrachloride Except Use as CFC Feedstock

NOTE: Y-AXIS SCALE HAS BEEN CHANGED

Ms. **Claussen**. I think the thing to point out here is that because we are looking over a 100-year time scale, the differences of 1 or 2 years in the interim are not nearly so great as the fact that you actually achieve a phaseout by the year 2000.

We then looked at——

Senator **Chafee**. That is a pretty important chart you have there.

Ms. **Claussen**. Yes.

Senator **Chafee**. In other words, what you are saying is that whether you do it in the year 2000 or you do it in the year 1997 makes, in essence, no difference.

Ms. **Claussen**. Not nearly as much difference as other chemicals and other things which you will see later. It is because you are looking over 100 years, and I think the difference or 2 or 3 years in either direction is not as significant as the fact that you actually get out of the chemicals themselves.

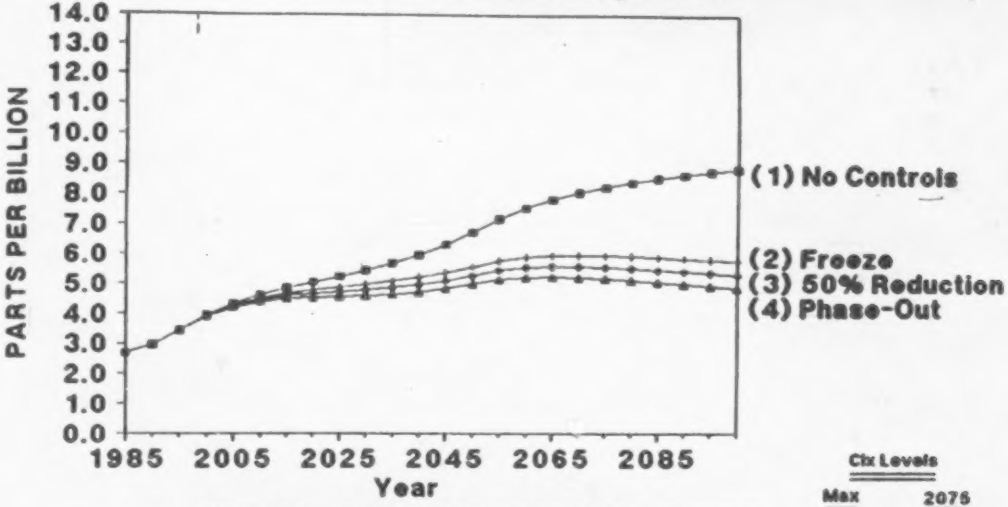
We also looked at carbon tetrachloride emissions. The no-controls line here, which is the top line, is a line that assumed about a 1 percent increase in the production of carbon tetrachloride. Now, our data on carbon tetrachloride are not particularly good, and we have done this based on atmospheric levels and what we have seen in the atmosphere.

But if you assume that that 1 percent was to continue, you will see the very large difference between the no-controls line and either the freeze, the reduction, or the phaseout line. In fact, if you look at the difference between the no- control line and the phaseout line, you are talking about another 3 parts per billion of chlorine in the stratosphere, which is as big as the reduction that you would get from the CFC phaseout.

We did the same kind of analysis for methyl chloroform. Again, we don't have very good data on methyl chloroform either in the United States or across the world. We assume here a 2 to 2-1/2 percent growth rate, which is higher than we now know to be the case, but we are very concerned that methyl chloroform could be used as a substitute for some of the CFCs as they are phased out.

EFFECT OF CARBON TETRACHLORIDE EMISSIONS

TOTAL Clx CONCENTRATIONS
1985 Through 2100



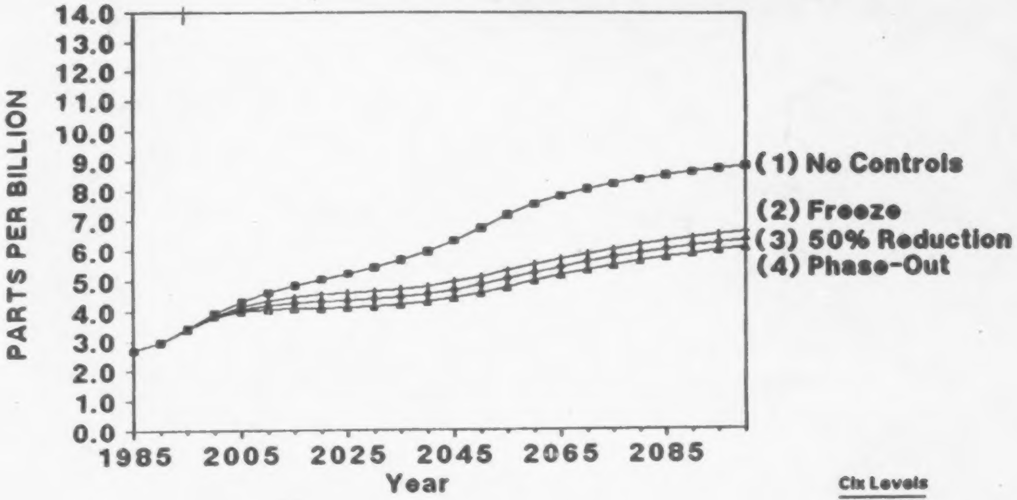
	Clx Levels	
	Max	2075
(1) 2000 Phase-Out of Fully Halogenated CFCs; No Controls on on Carbon Tetrachloride Except Use as CFC Feedstock	8.9	8.2
(2) 2000 Phase-Out of Fully Halogenated CFCs; Carbon Tetrachloride Freeze	6.0	6.0
(3) 2000 Phase-Out of Fully Halogenated CFCs; 50% Carbon Tetrachloride Reduction	5.6	5.6
(4) 2000 Phase-Out of Fully Halogenated CFCs; Carbon Tetrachloride Phase-Out	5.2	5.2

sumptions:

- o 100% Global Participation
- o No Controls on Baseline Methyl Chloroform or HCFC-22
- o No HCFC Substitution
- o Assumes Carbon Tetrachloride Growth Based on Past Atmospheric Increases

METHYL CHLOROFORM CONTROLS

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels	
	Max	2075
(1) No Methyl Chloroform Controls	8.9	8.2
(2) Methyl Chloroform Freeze	6.6	6.0
(3) 50% Methyl Chloroform Reduction	6.4	5.8
(4) Methyl Chloroform Phase-Out	6.1	5.5

Assumptions:
- o 2000 Phase-Out of Fully Halogenated CFCs
- o 100% Global Participation
- o No Controls on Carbon Tetrachloride Except Use as CFC Feedstock
- o No Controls on Baseline HCFC-22
- o No HCFC Substitution

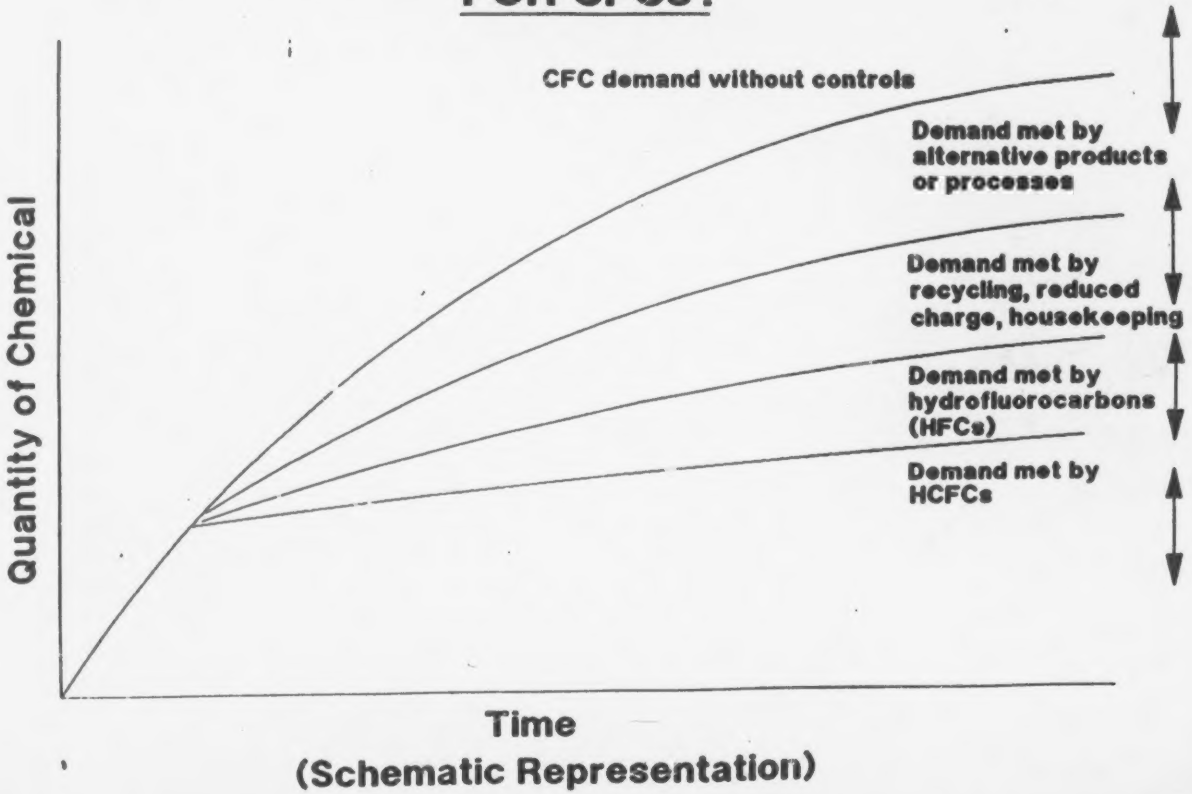
Ms. **Claussen**. To get better data, we did, as Mr. Rosenberg said, issue an ANPRM. But if you look here at the no-controls line, which assumes a 2½ percent growth rate in methyl chloroform, you will also see that between that and the freeze or between that and the 50 percent reduction or the phaseout, you are talking about a substantial difference in parts per billion of chlorine in the stratosphere.

Now, from the no-controls line to the phaseout, again you are talking about another 3 parts per billion. So this, too, like carbon tetrachloride, is as significant as the CFC phaseout.

The other thing that we felt was very important was to look at the HCFCs, which we believe will be used as substitutes for the CFCs, and we thought it useful to start off by making one point, and that is that it is not clear that the demand for HCFCs will encompass the entire demand that you might have as you phase out the CFCs.

In other words, there are other things that people might do as well. There are other products and processes that people could use to substitute for the demand. There is recycling and reduced charges and good housekeeping. There are other chemicals which do not have an ozone-depleting potential as the HCFCs do.

TO WHAT EXTENT WILL HCFCs SUBSTITUTE FOR CFCs?



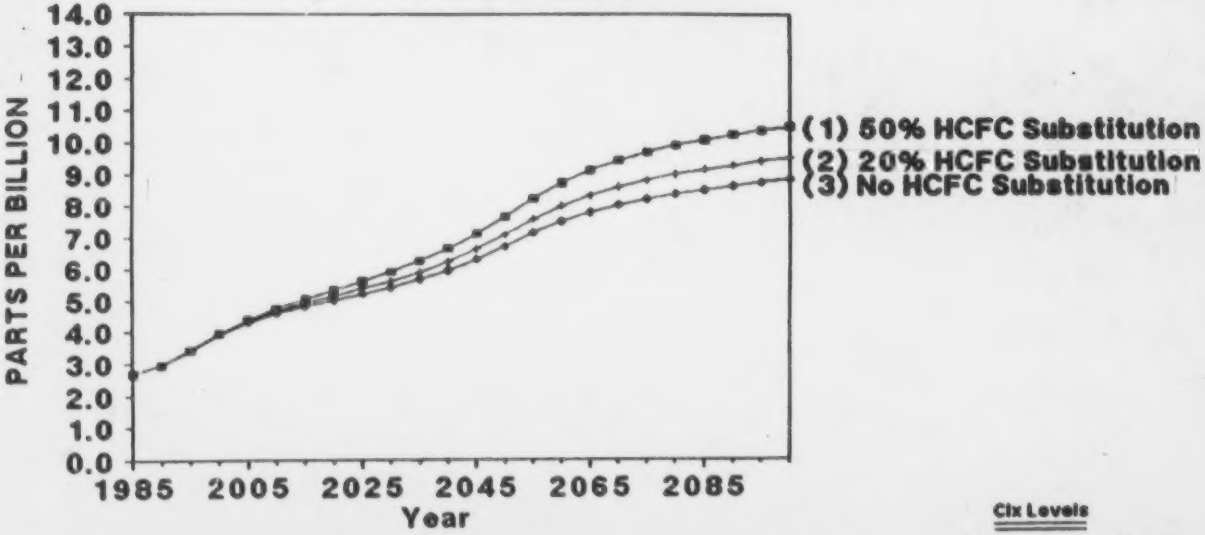
Ms. CLAUSSEN. So we just thought it useful to put this in perspective, that the HCFCs, while we believe they are necessary to achieve a CFC phaseout, are not the only substitute that will be used.

Now, we tried to do some runs on what some differences would be in how much the HCFCs actually are used. The top line there shows that the HCFCs would substitute 50 percent for the demand that would have been created by the CFCs. We also looked at a 20 percent substitution rate, and finally at a line that shows no substitution at all.

I think you can see here that there is a significant difference between the 50 percent substitution rate and the 20 percent substitution rate on the order of about 1 part per billion, and then a somewhat smaller difference as you move down to a line that shows no HCFCs at all.

LEVELS OF HCFC SUBSTITUTION

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels	
	Max	2075
(1) HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol	10.5	9.7
(2) HCFCs Capture 20% of What CFC Market Would Have Been Without Protocol	9.5	8.8
(3) No HCFC Substitution	8.9	8.2

Assumptions:
- o 2000 Phase-Out of Fully Halogenated CFCs
- o 100% Global Participation
- o No Controls on Carbon Tetrachloride Except Use as CFC Feedstock
- o No Controls on Baseline Methyl Chloroform or HCFC-22
- o HCFCs Average An ODP of 0.05

Ms. Claussen. Now, there is one other thing that I would like to point out here, and that is, we had to assume some ozone-depleting potential average in order to do this chart, and we selected 0.05 as the ozone-depleting potential to use. It may be useful to look at some of the range of HCFCs ODPs that are possible. And so you see on the right-hand side there that you go from 0.02 in some cases, which is clearly below the 0.05, all the way up to 0.1 for HCFC 141b.

So we thought we would do another set of sensitivities to see what difference it made if you not only captured maybe 50 percent versus 20 percent of the market but also looked at differences in the ODPs if you selected your chemicals based on that. And again, there is a significant difference here between the top line, which is a 50 percent substitution rate and a 0.05 ODP, which I think is sort of the worst-case HCFCs substituted for the largest amount, and they are probably the worst on the average, moving all the way down through 20 percent substitution and the same average ODP, 50 percent with a lower ODP, and then the better line there, 20 percent with a 0.02.

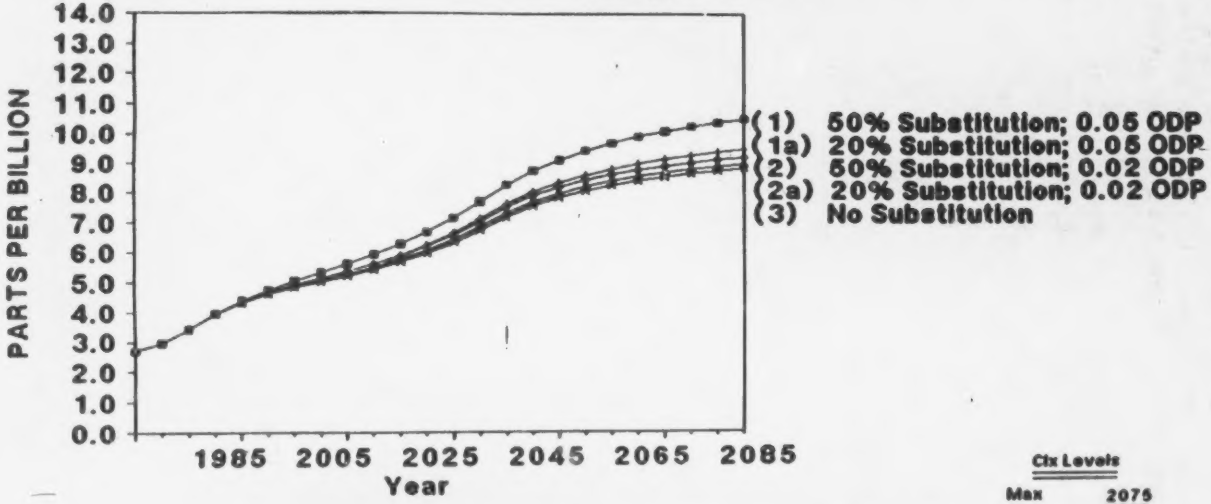
ESTIMATED ODP OF HCFCs VARIES

Montreal Protocol Substances		Others	
CFC-11	1.0	HCFC-141b	0.10
CFC-12	1.0	HCFC-22	0.05
CFC-113	0.8	HCFC-123	0.02
CFC-114	1.0	HCFC-142b	~0.05
CFC-115	0.6	HCFC-124	0.02
Halon 1211	3.0	Methyl Chloroform	0.15
Halon 1301	10.0	Carbon Tetrachloride	1.1
Halon 2402	6.0		

Average ODP of HCFCs Will Affect Clx Levels

HCFC SUBSTITUTION - AVERAGE ODPS

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels Max	Clx Levels 2075
(1) HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; HCFCs Average An ODP of 0.05	10.5	9.7
(1a) HCFCs Capture 20% of What CFC Market Would Have Been Without Protocol; HCFCs Average An ODP of 0.05	9.5	8.8
(2) HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; HCFCs Average An ODP of 0.02	9.2	8.6
(2a) HCFCs Capture 20% of What CFC Market Would Have Been Without Protocol; HCFCs Average An ODP of 0.02	9.0	8.4
(3) No HCFC Substitution	8.9	8.2

Assumptions:
- o 2000 Phase-Out of Fully Halogenated CFCs
- o 100% Global Participation
- o No Carbon Tetrachloride Controls Except Use as CFC Feedstock
- o No Controls on Baseline Methyl Chloroform or HCFC-22

Ms. **Claussen.** I think what this really shows is that it is very important that HCFCs not capture a huge portion of the market and that one picks them wisely as one goes about making one's choices.

Now, if all of this is confusing, we tried to put it all together so you will have a complete picture of what all of these charts mean in total.

Senator **Baucus.** But this is one of the most important ones, though, in what it shows.

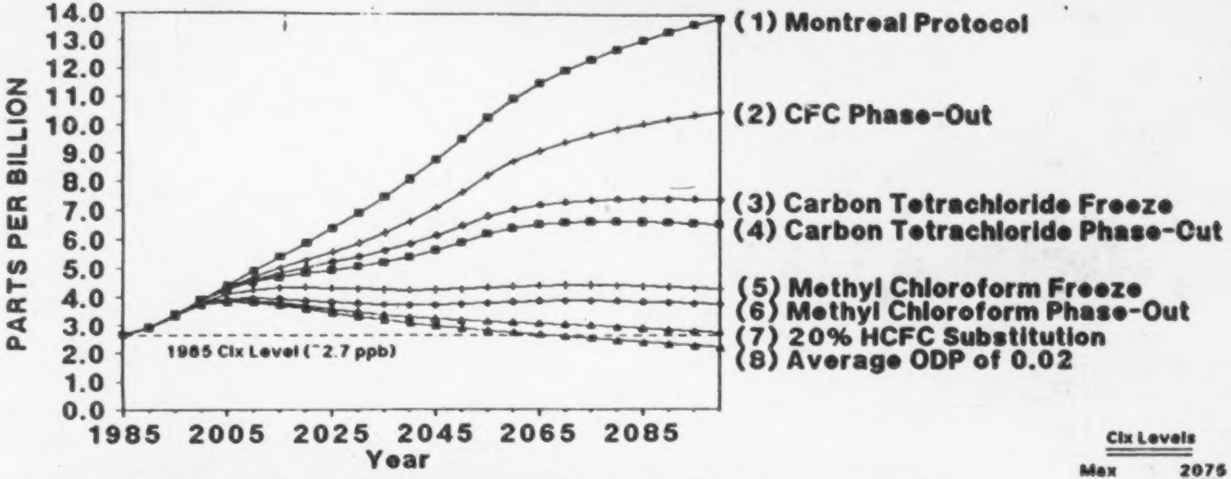
Ms. **Claussen.** Yes.

Let me tell you that the top line here, which is the current Montreal Protocol line, is different than the line I showed on the first chart, because I assumed in this chart that you would have HCFCs substituting at a 50 percent rate, and therefore that the total chlorine, by the time you get out to 2100, is almost 14 parts per billion, and remember that we are now at 2.7 parts per billion, and we created the ozone hole somewhere between 2 and 2.7 parts per billion.

Now, as you go down the chart here, you can see that we include the phaseout of CFCs, the phaseout or freeze of carbon tetrachloride, a freeze or a phaseout of methyl chloroform, a lower substitution rate for the HCFCs, and finally, a lower substitution rate with a lower average ODP.

CUMULATIVE REDUCTIONS

TOTAL Clx CONCENTRATIONS
1985 Through 2100



	Clx Levels	
	Max	2075
(1) Montreal Protocol Reductions; No Methyl Chloroform Controls; No Carbon Tetrachloride Controls; HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol	13.9	12.4
(2) 2000 Phase-Out of Fully Halogenated CFCs; No Methyl Chloroform Controls; No Carbon Tetrachloride Controls HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol	10.5	9.7
(3) 2000 Phase-Out of Fully Halogenated CFCs; No Methyl Chloroform Controls; HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; Carbon Tetrachloride Freeze	7.5	7.4
(4) 2000 Phase-Out of Fully Halogenated CFCs; No Methyl Chloroform Controls; HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; Carbon Tetrachloride Phase-Out	6.6	6.6
(5) 2000 Phase-Out of Fully Halogenated CFCs; Methyl Chloroform Freeze; HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; Carbon Tetrachloride Phase-Out	4.4	4.4
(6) 2000 Phase-Out of Fully Halogenated CFCs; Methyl Chloroform Phase-Out; HCFCs Capture 50% of What CFC Market Would Have Been Without Protocol; Carbon Tetrachloride Phase-Out	4.0	3.9
(7) 2000 Phase-Out Of Fully Halogenated CFCs; Methyl Chloroform Phase-Out; HCFCs Capture 20% of What CFC Market Would Have Been Without Protocol; Carbon Tetrachloride Phase-Out	3.9	3.0
(8) 2000 Phase-Out of Fully Halogenated CFCs; Methyl Chloroform Phase-Out HCFCs Capture 20% of What CFC Market Would Have Been Without Protocol; HCFCs Average An ODP of 0.02; Carbon Tetrachloride Phase-Out	3.9	2.6

Assumptions: o 100% Global Participation o HCFCs Average An ODP of 0.05 (Except Case 8)

Ms. CLAUSSEN. I think it is important to look at where you reach or cross the line, and it is pretty clear that unless you do almost everything on this chart, you never actually are able to stabilize even at the levels that we are at today, and in fact, if you look at the 20 percent substitution line, you do not stabilize until 2100. With the average ODP of 0.02, I think you hit it at about 2050.

So I am sorry to bring all this bad news, which, of course, we did also bring in Helsinki, but I think it is a useful way of looking at what we are actually accomplishing here and what we still need to do.

Thank you.

Senator BAUCUS. Thank you very much, Ms. Claussen.

I guess the main point, as I understand it, of that last chart is that if there are about 2.7 parts per billion chlorine in the atmosphere in 1985, that under the Montreal Protocol only, with no other constraining action, that the amount of chlorine in the atmosphere would increase over fivefold——

Ms. CLAUSSEN. That is correct.

Senator BAUCUS [continuing]. To about 14 parts per billion by the year 2100.

Ms. CLAUSSEN. Right. We are talking about 100 years.

Senator BAUCUS. For the next hundred years, but that we can maintain the present level only with a total phaseout of CFCs plus a total phaseout of carbon tetrachloride, plus a total phaseout of methyl chloroform and with, as I understand it, a 20 percent substitution rate for HCFCs, and an average, I guess—what is the phrase called?

Ms. CLAUSSEN. Ozone-depleting potential.

Senator BAUCUS. Ozone-depleting potential of 2 percent.

Ms. CLAUSSEN. Yes.

Senator BAUCUS. All right. Well, we have our work cut out for us.

Dr. Watson, I wonder if you could explain a little more clearly to me the difference between the short-term and the long-term benefits. I did not quite understand that.

Dr. WATSON. Yes. I think that is important to understand. The reason that the fully halogenated gases such as fluorocarbon-11 and 12 are so environmentally damaging is that they have these 100-year lifetimes. So you start to put them into the atmosphere, and it takes a long while for them to equilibrate.

The advantage of the HCFCs is that they have a much shorter lifetime of the order—maybe they range from, say, 1 year to 20 years, and so they start to build up, but very quickly they come to equilibrium.

It is a little bit like putting water into a bathtub in some respects. If you put the water coming into a bathtub at a given flow—that would be the same as fluorocarbon-11 or fluorocarbon-22 going into the bathtub—the difference is, if you have the bathtub with only just a small hole in it, what will happen with the water, it will rise up and up and it takes a long while; it will suddenly come to a level and stabilize with fluorocarbon-11, and it will be a high level of chlorine loading.

The problem with fluorocarbon-22 is, it has got a shorter lifetime, in this case 22 years. It will rise, and after a while, it is just like having the plug a bit more open on your bathtub. It will rise until you get an equilibrium between the water coming in and the water flowing out of the bathtub, and it will come to a lower level.

The trouble is, in the first few minutes, in the case of filling up a bathtub, the water rises roughly at the same rate, and it is the same with fluorocarbon-22. You put the same emission rate of fluorocarbon-11 and fluorocarbon-22 into the atmosphere. Over the first few years, they actually go up into the atmosphere at roughly the same rate, only what happens is, slowly but surely, the atmosphere controls fluorocarbon-22 and it plateaus, while fluorocarbon-11 keeps going up.

And so, it takes a few lifetimes of the gas before it comes to equilibrium. Until you reach that equilibrium point, the gases have a very comparable effect on the atmosphere. So to a first approximation, the shorter the lifetime of the gas, the less environmental damage it can ever do. Fluorocarbon-22 has a lifetime of the order of 20 years; fluorocarbons-11 and 12 have atmospheric lifetimes of 100 years or so. And so, over those first few years of growth, unfortunately, you have gained very, very little either in ozone depleting or in global warming.

And so if you want to get benefit, if you want to get immediate benefit by phasing out fluorocarbon-11 or 12, the greatest benefit you gain is if that substitute has either zero ozone-depletion potential, of course, the HFCs, or it has a very, very short lifetime. So the shorter the lifetime, the less likely it will have either any impact on climate or any impact on ozone. But it is a very different concept looking over the very, very long time frame versus looking over those first few years. It takes some number of years to get benefit.

Senator BAUCUS. But based upon the list of substitutes that you first mentioned, what is the average lifetime of those? What is the difference? Where do you draw the line between short term and long term? What is the average effect of those?

Dr. WATSON. If you arbitrarily say a gas with a short lifetime is 10 years, then likely most of the substitutes, the HCFCs—those are the ones that do contain chlorine—123 is only of the order of a year or so, so it has a very short lifetime, thank goodness; 124, 141b and 142b look to be 10 years or less.

One of the HFCs which contains no chlorine but has the potential for greenhouse warming is 152a. That also has a very short lifetime, probably of the order of year.

The ones that have lifetimes greater than 10 years— this is very arbitrary, taking 10 years as the definition of short and long—fluorocarbon-22 is longer than 10 years and 125 and 134a are longer than 10 years.

So, in essence, if you want to see environmental benefit, if the gas has got a 10-year lifetime, then in that first 10 years or so of substitution, if it is pound for pound—I mean, assuming it is 1 pound for 1 pound, as Eileen Claussen has shown—you probably do not want to go for 100 percent for substitution; you want to go for a much lower rate of substitution.

But if you were to replace 1 pound for 1 pound, in those first few years, you would see very little benefit. After 10 or more years, then you start to really see the benefit.

Now, you have to remember one advantage of these compounds. If we were to put them into the atmosphere, and if we were to ever then later regulate them—and I am sure industry would not like that concept—then, of course, your benefit would come back. Once you put these gases into the atmosphere, with fluorocarbon-11, with a 100-year lifetime, its impact is seen for several hundred years afterwards. That is why we are so worried about the ozone hole.

With these other gases, if you were to ever stop producing them, you would get environmental benefit fairly quickly. They are all out of the atmosphere in a couple of lifetimes, a few years, a few tens of years.

Senator **BAUCUS**. Is it worth our while to try to find substitutes that have a dramatically shorter lifetime, or is that chemically, mathematically not very possible?

Dr. **WATSON**. It is unlikely that—I think industry is looking for all the gases it can, from what I can see, for the most environmentally safe substitutes. They are obviously trying to look at gases that have got certain physical properties that can be used in refrigerators, can be used in air conditioning units, can be used as solvents, and I think they have obviously picked the best group.

The reason this study was done is that it was sponsored by industry. They, themselves, want to know as much as you and I just what is the environmental acceptability of these gases, and it turns out that typically these gases have of the order of a 10-year lifetime or so.

Senator **BAUCUS**. Thank you. I have more questions, but I see my time has expired.

Senator Chafee.

Senator **CHAFEE**. Thank you, Mr. Chairman.

Ms. Claussen, I think there is a point to be made in your charts, and that is that the 2.7 level that we are currently looking at is not necessarily a safe level. I mean, we are still in plenty of trouble at the 2.7 level.

Ms. **CLAUSSEN**. Yes. I tried to point out that you have the ozone hole and everything else at that level.

Senator **CHAFEE**. And it seems to me that we cannot be satisfied at saying, well, we are home free if we can get down to the 2.7 level. I do not know what is a safe level, but certainly the 2.7 is not.

Dr. Watson, do you agree with Ms. Claussen's charts?

Dr. **WATSON**. Yes. In fact she went through them with me earlier, and actually, industry, DuPont, did a very similar analysis and came out with some very similar conclusions.

You are absolutely right, 2.7 is not the safe chlorine level. If you want to get rid of the Antarctic ozone hole, you would like to get the chlorine loading back to the order of 2 parts per billion. I think if we could ever get it back to 2 parts per billion, the ozone hole will in all probability disappear. It would also protect us from global ozone depletion and ozone depletion in the Arctic.

I think what has been demonstrated by Ms. Claussen's charts is that it is extremely difficult to get back to a safe chlorine loading.

Senator **Chafee**. As I understand it, in terms of your study of those eight chemicals, you are going to be finished by mid-August of this year?

Dr. **Watson**. That is correct. We will release our report in mid-August.

Senator **Chafee**. Are you working closely with industry?

Dr. **Watson**. This particular study was initiated by industry, and the initial costs were borne by industry. They used, as I say, the best scientists, for example, to make sure this is not prejudiced. Scientists such as Mario Malina and Sherry Roland were part of this study, to make sure it is completely above board. As I say, it is now part of the international ozone assessment. We are working with industry; and we are working with the scientific community, of course.

Senator **Chafee**. I am sympathetic with industry's efforts here. I know Allied and DuPont and perhaps others are putting a lot into this, and if they do not know which way to go, or they come up with a substitute but the substitute might be a bad actor itself, it is very frustrating.

Do all coolants have to have chlorine in them? Is chlorine an essential element of any coolant?

Dr. **Watson**. I doubt it. I think it is purely the physical properties of the coolant. I presume—and I am way outside my field of expertise—I presume industry has looked to all types of coolants and has come to the conclusion that these are the only chemicals that do have the right physical properties. So I think that question ought to be addressed either to EPA or to the next panel.

Senator **Chafee**. I do not know whether you are familiar with this legislation. Based on your studies, Dr. Watson, are you comfortable with leaving these substitutes totally unregulated?

Dr. **Watson**. If it is these substitutes being the—I am not quite sure which substitutes.

Senator **Chafee**. The ones that you listed.

Dr. **Watson**. All right. I think it is clear—let me start from the beginning. It is clear that the Montreal Protocol must be strengthened to a complete phaseout of the gases in the Montreal Protocol. It is clear to me, also, that methyl chloroform must be regulated, and carbon tetrachloride.

Now, the question then comes on these other substances.

Senator **Chafee**. And neither of those are included in the Montreal Protocol?

Dr. **Watson**. Correct, and I think, as Eileen Claussen's charts have shown, it would mean, if we do not include methyl chloroform nor carbon tetrachloride, the chlorine load in the atmosphere can only inevitably go up to lead to more potential danger to ozone, not only in the Antarctic but worldwide. Therefore, it is quite clear to me, if we want to protect the ozone layer, carbon tetrachloride and methyl chloroform must be added to the Montreal Protocol.

Senator **Baucus**. Must be phased out.

Dr. **Watson**. Exactly. I think those charts demonstrate that quite well, and I believe that many other nations have come to exactly that same conclusion.

Now, in addition, the question is, should there ever be regulations on the HCFCs? I think it is quite clear that you cannot have unbridled growth in any substitute, because if you got back to the same high chlorine loadings in the future, it would be a point of absurdity.

Therefore, the question is, How much chlorine can be added to the atmosphere to be safe? I don't think there is a simple answer to that. I think the answer is, we want to try not only to stabilize the chlorine levels of the atmosphere; we need to try to reduce them.

Therefore, when looking at substitutes, we must try to aim at substitutes that have the lowest ozone-depleting potential possible and have the lowest global-warming potential possible. You clearly cannot have unbridled growth even in the substitutes.

Senator **Chafee**. In conclusion, I would just like to say, I noticed that Mr. Rosenberg mentioned the President saying that the United States would go along if there were safe substitutes. I am not so sure I agree with that last caveat. I think, even if there are no substitutes, for the sake of the world and health and all the points that have been made here before, that these should be still banned.

Mr. **Rosenberg**. Senator, that is the President's position. I think at this point that the activity at EPA and at other agencies is to try to foster the development of safe substitutes. The question of whether these other chemicals should be banned is something that will have to evolve.

Ms. Claussen has done a wonderful job in managing the analysis to establish this presentation. We expect, on the basis of Dr. Watson's and other scientific research over the summer, to be in a position to evaluate whether next steps are required under the Protocol this fall.

There is another meeting next spring that the United States would have to have a position on, but this does open up the question whether there should be other actions under the Protocol, and that is the primary thrust of the Advance Notice of Proposed Rulemaking, to gather as much information as we can to give industry a chance to make a formal presentation, which of course we will present to the committee once we receive it.

But the analysis that is presented clearly raises the question that what has been proposed does not solve the problem.

Senator **Chafee**. My time is up, Mr. Rosenberg. Thank you.

Senator **Baucus**. Thank you.

Next on my list is Senator Lieberman, but I understand he has very graciously deferred to the Senator from Minnesota, Senator Durenberger.

OPENING STATEMENT OF HON. DAVE DURENBERGER, U.S. SENATOR FROM THE STATE OF MINNESOTA

Senator **Durenberger**. That is the gracious nature of Senators from Connecticut, and I am very grateful.

I have a difficult problem this morning, as the two members of the Finance Committee know. We are having a hearing on rural health care, and I am the ranking member of the committee.

For the purpose of just getting Bill Rosenberg's reaction, I would like to say a few words on the subject of fees, if I may.

I had an opportunity to review the testimony before the hearing today and was particularly struck by the written statement of the Alliance for Responsible CFC Policy, which argues vehemently against the imposition of any fees on CFC production.

There are two themes in the argument that the Alliance makes. The first, they point out that fees may work a hardship on the users of CFCs at a time when the users are all trying to make a difficult transition to alternative substances, and I think that is a good point.

High fees passed along to users may make the transition to alternatives more difficult. But the same thing can also be said of high prices. I think they have the same impact on users, and prices for CFCs are already rising dramatically, even before the regulations implementing the Montreal Protocol go into effect.

So it seems perhaps a little hollow for the Alliance to complain of the impact of government fees on users when the producer companies, which I guess are members of the Alliance, are having the same impact by raising their prices.

The second argument is that the producers need the revenues from higher prices in order to pay for the research and development of alternatives. Government fees would slow the transition to alternatives by taking away funds necessary to test and develop substitutes and new technologies.

That argument seems to presume that the CFC cartel which is created by the phaseout rules has some kind of, may I say, divine right to be the producers of the alternatives.

There are hundreds of other chemical companies out there, and I wonder out loud why a little chemical company like 3-M, for example, which is still located in part of Minnesota—why 3-M, which would like maybe to get into the market for alternatives, why they have to scramble to get research dollars in the usual way while a current CFC producer gets a huge research budget handed to it courtesy of government regulation. Simply because their product created the problem? That does not make any sense. The CFC cartel I do not think should have any special claim to the alternatives market or funds for research and development.

There is one area in which I would agree with the Alliance, and I do not think that the Government needs a $100 million research program on CFC substitutes. It seems like all of the evidence before the committee suggests that millions of dollars of research are already in place, and I have not heard anybody say that some special problem cannot be solved because there are not enough research dollars.

At a time when the Federal budget is so far in deficit, we do not need to be looking for excuses to create a new spending program, and if members of this committee think a research program is essential, then I hope they can describe the research first that would be financed and show us why it will not happen in the private sector, anyway.

But finally, on the subject of the fee itself, my first reaction—and I think I discussed this with you at another time, Mr. Rosenberg—my first reaction was to go with a two-part system. The first part would be a straight fee, so many cents per pound. The second would be a windfall-profits tax which would capture the excess profits in the system.

The justification for a fee is that prices will have to go up somewhat to support a market for the alternatives, which are going to be more expensive than the CFCs. The Government can create that price increase by imposing a fee.

But the more I have been looking at the politics of the issue, the less inclined I become to support the fee, because if we have a fee, there is no doubt that some user group out here is going to come in and say we are putting them out of business. They will want some sort of rebate or special fee just for their particular CFC, and before you know it, we are acting like the Finance Committee here, setting prices for these products, and I think we have demonstrated in the last few years that that does not work.

So now I have come to the conclusion—and I just want to get your reaction—that a straight windfall-profits tax, just the last part of this initial reaction, might be the best way to go. Under a windfall-profits tax, there is a floor price that you take from some historic period. You could take 1985, 1986, or something like that in the case of CFCs, and then each year you at EPA would add an inflation factor to that floor to reflect the increased costs of production, and then the tax captures everything between the inflated floor price and the actual market price.

That is what I think we should do here; that is, a windfall-profits tax. We need a less pejorative, more enticing name.

I thought of "obsession."

There will be price increases by producers as they try to make markets for alternatives, and we will capture those price increases with the tax. But no user is going to be able to come in here and say that the tax itself—that is, the Government—is putting them out of business, because a windfall-profits tax, unlike a fee, is not the cause of a price increase.

What is your general reaction?

Mr. ROSENBERG. I think that we agree with almost everything you have said except the windfall-profits tax characterization.

But in fact the fee structure that could be established under current authority at EPA would allow an adjustment that could approximate what we expect to be the undue profit, and that is really the principal justification for proceeding forward. The concept that there would be new profits created by virtue of the shortages established under national policy and that those new profits should be appropriately belong to the people of the United States rather than the particular producer of the product that we want to phase out.

I think that there has not been a full development of how the fee program would work or whether there should be even a different program or an auction, but many of the thoughts that you raise are thoughts of people at the staff at EPA that are trying to develop a specific fee program, and it is intended to reflect approximately what the profits would be.

Having been a utility regulator once before, you want to come up with a surrogate, perhaps, and rather than rate of return and other types of justifications that would require in every separate situation a rate case, if you will, to determine what that profit is, I think, in establishing something that works, we need to look at general goals which we would agree are the ones that you have laid out, Senator, but also some more pragmatic, perhaps, way of approaching it in a rulemaking procedure rather than a rate case or a specific finding for each particular producer.

We would agree that the incentives are sufficient out there to attract the capital if there is going to be a firm phaseout, which we now have established as a part of American policy, to generate all the capital necessary to produce the substitutes.

The issue that Dr. Watson and Eileen Claussen have raised as to making sure that the substitutes are safe, to the extent we can, is certainly one of the regulatory responsibilities of EPA, and we are now organizing a formal advisory committee that will make sure that we get all the data we need, the reports of which we can make available to the committee.

Senator BAUCUS. Thank you, Mr. Administrator, and thank you, Senator.

Senator Lieberman.

Senator LIEBERMAN. Mr. Rosenberg, I want to pick up on the final question that Senator Chafee asked, because in that part your testimony troubled me somewhat.

If I may go back, a couple of weeks ago a reporter asked me what I thought was the best thing that had happened in the first 100 days of the Bush Administration, and I said the commitment to ban CFCs by the end of the century, because it is bold, it is specific, it is real, and it also suggests to me a change of course in terms of environmental protection which I appreciate.

But I am concerned that in hearing you add the clause that the goal of having the ban, "as long as safe substitutes are available by the year 2000," if I may put it this way, opens a hole in the administration policy that is as big as the hole in the ozone layer.

Maybe I should start with Ms. Claussen and ask, I had understood that at the Helsinki meeting the United States had dropped its insistence on that clause. Am I correct or am I misinformed?

Ms. CLAUSSEN. Well, the declaration that was adopted by consensus did not include that statement, and it was adopted by consensus.

Senator LIEBERMAN. Right. Was that discussed at all? Was there an attempt to include that in the declaration?

Ms. CLAUSSEN. Yes, there was. But I think the point is that no one would be in favor of unsafe substitutes, and we have 11 years here to make sure that we can get substitutes that are safe. I would not view it as a negative; I would view it in a positive way, that we want to make sure we do not create another problem while we get rid of this one.

Senator LIEBERMAN. That is the reassurance that I am really asking for from you and Mr. Rosenberg. I think the surest way to make sure we get safe substitutes is to ban CFCs. This committee has found that, before I got here, I know, that if you want to guarantee sufficient effort at developing new products and new technologies, the best way to do it is to force people to do it.

I just want to feel confident that that clause, "as long as safe substitutes are available," will not be used in the coming years as a way to make this goal of a ban less real than it happily appeared to be.

Mr. ROSENBERG. I think that it is a condition, and it is not an insignificant one, as you have pointed out. The position of the American delegation in Helsinki was that this condition is our policy, and while there was a declaration from that meeting, we believe that that is not a politically binding declaration.

The President's position is that everything must be done in science and in the regulation and in the policy to promote the establishment of safe substitutes. We believe that can be done, but the policy does continue to have that condition in it.

That is not to say we should not work as hard as possible to achieve those results, and we are encouraged by announcements such as the auto industry made recently that by, I think, the 1993 automobile fleet, they expect not to use CFCs in the air conditioning systems. So we are seeing movements in the correct direction and believe that there will be time to evaluate and to work on the problem over the next period of time to assure that the CFC phaseout can occur. But there is no active effort in the administration at this point to change that condition.

Senator LIEBERMAN. I appreciate the steps that industry is making and the commitments that have been made. They seem to me to be real. But I want to say that I, as one member of this committee, am greatly troubled by the condition, and I hope that any legislation that we report out will not include it because the consequences that we have heard scientists and public health experts testify to about the real impact that ozone depletion will have on people's health in the next century to me are sufficient to justify the elimination of that condition and setting the goal absolutely, because then we will know that we will be protected from skin cancer, cataracts, and those assaults on human immune systems.

My time is running, and I just want to ask one more question. Is responsibility for international environmental issues localized in any way at EPA? I remember asking Administrator Reilly, at his confirmation hearing before us, whether he had contemplated establishing a position that would be solely responsible for international environmental issues.

Mr. ROSENBERG. Well, there is a division of EPA that is focusing on international relationships, but actually, as in this case, Ms. Claussen runs a program in the Office of Air and Radiation which is doing the regulatory work and the scientific work and coordinating with NASA and other agencies for recommendations to the EPA Administrator, and he goes before the National Security Council, I believe, or the Domestic Policy Council, as the case may be, for full government-wide debate, and then ultimately the President decides.

There are people at EPA, and that staff is expanding, that are assisting him in his work on international matters, but much of the substantive work is still done in the programmatic areas.

Senator LIEBERMAN. Isn't that potentially a problem? I mean, you are the Assistant Administrator for Air and Radiation; Ms. Claussen, for Indoor Air Programs. Isn't there a danger that you may naturally get preoccupied with the Clean Air Act, for instance, and there will not be a focus of leadership in the agency on these international issues?

Mr. **Rosenberg**. Well, I think that the expertise quite often lies—we have a staff of 1,600 people in the Air Division, with much scientific, engineering, and other expertise. I think the real important aspect is to make sure that those issues are taken at a high level of priority, and Mr. Reilly has made it very clear that they are. As you can see, he is very much involved in presidential initiatives on CFCs or global climate, and I am sure he will continue to be.

Senator **Lieberman**. If I might add right there, I understand he is going, along with the President, to Italy. Administrator Reilly has been asked specifically to join the President at the end of the month. They want to talk to him about environmental matters.

In fact, he even mentioned to me that almost every prime minister or foreign minister who comes to visit the United States specifically requests to stop by and see Administrator Reilly. So I think some of that is beginning.

Mr. **Rosenberg**. It is very clear that there is a new international focus at EPA, but of course in the whole world, on the environmental questions. That is not to say we are not working hard on the Clean Air Act as well.

Senator **Lieberman**. Yes. Obviously, we want you to do that. I guess all I wanted is to be guaranteed or feel some security about that. You still have time to make international environmental problems a priority for you.

Mr. **Rosenberg**. Well, this particular office—I must say that, having been confirmed and sworn in about 10 days ago, it takes a little time to get up to speed, and this is one area that Mr. Reilly has made very clear that he wants handled as a top priority.

Senator **Lieberman**. Thanks, Mr. Rosenberg.

Senator **Baucus**. Thank you very much, Senator.

Senator Graham.

Senator **Graham**. Thank you, Mr. Chairman.

Dr. Watson, what are some of the potential toxic or other harmful characteristics to human health from the compounds that you identified as having a shorter life span?

Dr. **Watson**. Unfortunately, I cannot give you a good answer to that question. Another part of industry has set up a group called a PAFT group which is doing toxicological testing of all of the eight potential substitutes.

Also, as a part of our study, we are trying to identify all the possible chemical byproducts of the atmospheric degradation. Once we have done that, that information will indeed be passed on to experts in the biological health effects area to see whether or not there could be any adverse effects, biological or health effects.

At this moment in time, it is hard to do a complete study on the health effects of the degradation products when we do not have a good possibility of identifying them quantitatively. So the toxicological tests of the source molecules, the HFCs and HCFCs, is undergoing a very strong scrutiny which I have nothing to do with.

My role here was to try to identify the degradation products of those gases so that information could be passed to the relevant health experts. But it is something that we are all quite aware of in the science community and even in industry, and it is clear that they have to have a clean bill of health in that particular area.

Senator **Graham**. How will that issue be dealt with in your August report?

Dr. **Watson**. What we will do in the August report is simply state what the chemical byproducts of these HCFCs are, and HFCs, and at that stage, we will make sure that UNEP, WMO, and, hopefully, then, through, as we say, the World Health Organization, they understand what chemicals we are dealing with, and hopefully, the relevant experts can be put onto it.

But, as I say, at this moment in time, there is a large panel looking at the toxicological properties of the source gases, the substitutes themselves. We have to make sure that same community of experts understands what the possible degradation processes are, or products are, rather, and look at their effects as well.

Senator **Graham**. Mr. Rosenberg, I would like to return to some of the questions that Senator Durenberger was asking relative to the proposed fee, the windfall-profits provision.

In your recommendations, do you contemplate any variation based on the ultimate user of the CFCs based on criteria such as the environmental value of the end product produced by that user of CFCs or the cost sensitivity of CFCs to the economic viability of that user industry?

Mr. **Rosenberg**. Senator, I don't believe that is the proposal. I think the proposal is to simply capture the windfall profit and allow the market to allocate the burdens rather than to have a massive regulatory program that might get into case-by-case analysis of that sort.

Senator **Graham**. I understand that one of the significant users of CFCs is in the insulation business and that there have been some studies which indicate that the use of those products for that purpose has a significant energy conservation benefit.

Would it not be appropriate to consider in a larger context the relative values of different uses of CFCs in assessing fees or in structuring a windfall-profits tax?

Mr. **Rosenberg**. Senator, if, as Senator Durenberger said, the fee actually works, or the auction actually works, to capture the windfall profit, then the impact of the fee or auction that came into the Government would not be any different than the price itself, because what we are attempting to do is to establish something that does not by itself push up the price but only assure that the windfall to the producer by virtue of the regulated reduction in supply in relationship to demand is captured for the American people rather than for the producer itself.

So we hope that, as this is established and we are seeking advice on a rulemaking from all of the interested parties, that the result of the program would not be to increase the cost to any particular user than would exist in the marketplace where the producer captured that profit.

Senator **Graham**. Isn't the fact that by government regulation we are restricting the supply of CFCs going to have the inevitable effect of driving up the cost to the user?

Mr. **Rosenberg**. We expect there would be a higher price, and the profit we want to capture.

Senator **Graham**. The windfall profit is to capture that segment of the ultimate cost to the consumer which is represented by the government action to restrict supply.

Mr. **Rosenberg**. That is correct.

Senator **Graham**. I guess my concern is that if that additional cost to the user is applicable to all users without any further considerations of the social or economic values to the society of that product, that we may have the unintended result of driving some products which have considerable social value out of the marketplace because they are incapable of absorbing that higher cost.

Mr. **Rosenberg**. We hope that the marketplace would find alternative products to meet those responsibilities, and in the case of insulation, we hope that the insulation producers would be able to develop alternative chemicals that could allow them to continue to do the important work that they are doing.

Senator **Graham**. As part of your review of this before a final decision, will you evaluate the potential of that substitution, the timing of it, and the impact of the likely additional cost to that user group?

Mr. **Rosenberg**. Yes, indeed. We are looking at all the——

Senator **Baucus**. We need a one-sentence answer, please.

Mr. **Rosenberg**. Yes.

Senator **Baucus**. Thank you.

Thank you very much, Senator Graham.

We will have another round for those who want to ask more questions.

Senator Lautenberg.

Senator **Lautenberg**. Thanks very much, Mr. Chairman, and my compliments, also, for holding this hearing and getting on with the review of the potential legislation that is being considered.

Mr. Rosenberg, it is good to see you now that you are in your official capacity. You are no longer exempt from criticism or bearing responsibility for adverse policies, but in any event, pursuant to the questions that I have heard since I have arrived—and I am sorry that I was not here earlier—in the event that something has been asked and discussed, please don't be bashful about saying so. We do have a record that we will be looking at.

But in terms of drying up the supply of CFCs, we would like to see the damage being done reduced as quickly as possible, but the fact is, there is a whole chain of product development and product use that comes as a result of having this material at the core of the product.

You said several times, let the market regulate the programs and find alternative products. Now, that is not always as rapid a process as we would like to see it be. What happens if the alternative products do not develop as quickly, the supply is in great demand? How does EPA monitor the price of the CFCs, and how do they address the problem?

Mr. **Rosenberg**. EPA is about to send out letters under our regulatory authority to establish periodic trend lines of the prices of CFCs to really develop some type of record to see what is happening on prices, so it is our intention to monitor not only the production and consumption but also the price movements of CFCs now that the freeze is going into effect beginning in July. So we will have an ongoing record of that.

We also, for your information, are going to establish a formal advisory committee to allow users and producers and other interested parties to formally communicate with EPA during the process to assure that we are hearing from everyone we should hear from, and that is in the process of being established as well.

So we do hope to keep a good record of the situation in that industry.

Senator LAUTENBERG. And what do you do if the price does start to move up? What kind of action presently do you contemplate taking to protect the marketplace?

Mr. ROSENBERG. We do not have regulatory authority, nor do we intend to seek regulatory authority, to regulate the prices of CFCs. However, in the context of the discussions we have had before on how we would hope the fee or auction process would work to capture the windfall profits attributable to the supply and demand point you made, we hope we will——

Senator LAUTENBERG. But that does not prevent harm to the product manufacturer, the user of the material.

Mr. ROSENBERG. That is correct.

Senator LAUTENBERG. I mean, so you take away the windfall profits, but what happens to those people who are making products, energy conservation, and so forth? How do we get some equitable distribution there?

Mr. ROSENBERG. At that point, those producers will have to decide whether they wish to continue to use CFCs at the higher price or use other alternative chemicals that are not CFCs to accomplish their goals. It is not something that EPA is going to instruct them or otherwise get involved in their decision on.

Senator LAUTENBERG. Right. Are we presently assured—and I guess I ought to be asking that question of the industry people we are going to be seeing in a couple of minutes—that there is enough material that has the properties that can permit them to make the products they need available generally? There has not been enough research, enough product development yet, to substitute for CFCs in terms of its particular properties and its product value.

Mr. ROSENBERG. Dr. Watson testified before you came, sir, as to the research and science that is going forward to evaluate the safety of the potential alternatives, and he listed a whole number of alternative gases that are being considered. A major report is due this August as to an evaluation of the toxicity and other safe questions relating to these substitutes, which should be the basis for all of our evaluation this year.

Senator LAUTENBERG. But that is still in the research area? You are not prepared at this time to say that here are products that substitute fully for CFCs that are available in the marketplace, that are safe? Is that so, Dr. Watson?

Dr. WATSON. I think you are correct in that this particular question should indeed be aimed at industry. I think they are optimistic that they can come up with some safe substitutes, but I think the question can only be directed at Allied, Du Pont, other particular producers.

Senator LAUTENBERG. Thanks very much, Mr. Chairman.

Senator **Baucus**. Thank you very much, Senator Lautenberg.

Gentlemen and Ms. Claussen, a somewhat contentious question, at least insofar as there are variances in the bills, is the degree to which CFC production should be phased out. Some bills have 1994, 1995. The administration would like phaseout by the year 2000.

We will later, in a subsequent panel, hear from those who will want to phase out before the year 2000; we will hear some, certainly, from the industry who are opposed to phasing out before the year 2000.

I would like, very briefly, the views of Dr. Watson and Mr. Rosenberg. What do you think?

Dr. **Watson**. Given that we all want to protect the ozone layer, I think the most important thing that we must ensure is true global participation in a phaseout. We must ensure that molecules like methyl chloroform and carbon tetrachloride are also included.

I tend to believe the analysis done by EPA that the subtle differences in a phaseout in 1995 versus the year 2000 are not the prime issue. The prime issue is a complete phaseout of CFCs, adding carbon tetrachloride, adding methyl chloroform. That is the key issue.

And so I think, in the longer term, we should put most of our energies on adding new molecules to the Montreal Protocol and trying to make sure that we can get countries who have not signed the Montreal Protocol, such as China, India, and others, to sign the Montreal Protocol and agree to the full phaseout.

So I believe that I would not like to comment directly, but from a purely scientific perspective of protecting ozone, I think the 2- or 3-year differences are not the key issue.

Senator **Baucus**. Mr. Rosenberg.

Mr. **Rosenberg**. Senator, we think the 2000 year is the appropriate year.

Senator **Baucus**. Isn't it true that the United States is the only country, though, without the qualifier, "if adequate substitutes are developed"?

Ms. **Claussen**. I think that is true, but I don't think, if you asked any of them whether they wanted a lot of unsafe substitutes, that they would agree with that.

Senator **Baucus**. I agree, but that is not the question I asked.

Is it your personal view, Mr. Rosenberg, that we should not have the qualifier?

Mr. **Rosenberg**. I don't have a personal view on the subject, Senator.

Senator **Baucus**. I am asking you your personal view.

Mr. **Rosenberg**. I believe we should have the qualifier.

Senator **Baucus**. All right, thank you.

I must say, just as a personal aside, this whole issue took on a personal meaning for me this morning. Three-and-a-half hours ago, my dermatologist called me up and told me I've got basal cell carcinoma on the side of my neck here. He said it is fine, it can be taken care of, but I understand that, basically, basal cell carcinoma is somewhat caused by ultraviolet light.

It is just a pure coincidence. I just happened to have a growth removed, and he called me up this morning to tell me it is positive;

I have to have more action taken. But, anyway, there is a problem we have here that we have to address.

Senator Graham.

Senator **Graham**. No further questions.

Senator **Baucus**. Thank you very much.

Dr. **Watson**. Thank you, Senator.

Senator **Baucus**. Our final panel is Dr. Joseph Glas from Du Pont; Mr. Peter Likes with the Hussmann Corporation from St. Louis, Missouri; Mr. William Jelin from Barriers, Incorporated, Saco, Maine; Mr. David Doniger from Natural Resource Defense Council; Ms. Marilyn Montgomery from Genetron, from New Jersey; Ms. Cheryl Russell, director of Environmental and Occupational Health from the American Electronics Association; and Mr. William Walsh from the U.S. Public Interest Research Group based here in Washington, D.C.

I think I will just go right down the line here. Mr. Walsh, you are on the left. I am going to also enforce the 5-minute rule, so that when you see the green light, speak freely; amber light means get ready to close; red light means that's it.

Mr. Walsh.

STATEMENT OF WILLIAM WALSH, U.S. PUBLIC INTEREST RESEARCH GROUP, ON BEHALF OF THE CAMPAIGN FOR SAFE ALTERNATIVES TO PROTECT THE OZONE LAYER

Mr. **Walsh**. Thank you, Mr. Chairman.

My name is Bill Walsh, and I am an attorney with the United States Public Interest Research Group. Today I am appearing on behalf of The Campaign for Safe Alternatives to Protect the Ozone Layer, which is a grass-roots national alliance of activists around the country who are concerned about the consequences of further delays in addressing this stratospheric ozone crisis.

As you will see from the written testimony we have submitted, we believe that, from an environmental perspective, current proposals for the phaseout of certain ozone-depleting chemicals are wholly inadequate. We urge Congress to take all possible measures to push the responsible industries to stop production, use, and release of all ozone-depleting chemicals on a schedule that offers maximum environmental benefit.

I would like to pick up on some of the concerns of Senator Chafee with regard to EPA's testimony here today. He did make the point that the goal which EPA aspired to in its proposals in Helsinki was 1985 chlorine levels in the atmosphere, which coincided with the appearance of the ozone hole over Antarctica. That is clearly an inadequate goal.

We have also done a study, which I have submitted with our testimony, which analyzes——

Senator **Baucus**. I might say, too, that the statements of all of you will be automatically included in the record, to encourage you to keep to 5 minutes.

Mr. **Walsh**. Sure.

In the study that we have submitted with our testimony, we do point out that the EPA charts and graphs which we saw today do not examine scenarios with a quicker-than-year-2000 phaseout proposal, so we really do not have a good idea of the computer modeling that might support better environmental results from that type of schedule.

Second, you notice that the charts and graphs were linear in construction, and there is evidence to suggest that the atmospheric conditions and the ozone depletion that is occurring over the Antarctic are the result of non-linear phenomena; that is, that you cannot simply assume that, over the course of time, there will be progressive depletion. There are events occurring that accelerate that beyond the linear progressions.

In the few minutes I have to summarize our major concerns, I would like to highlight the need for what we call a national safe alternatives policy. We believe that nothing should further delay the rapid phaseout of ozone-destroying chemicals, but we must protect the stratospheric ozone layer without creating new risks of concern to human health and the environment.

Some alternatives are truly safe. Others, as we have heard today, will continue to deplete the ozone or are greenhouse gases, and some substitutes are carcinogens; they are linked to birth defects and they are associated with other illnesses, particularly in the use of solvents.

As an example, a recent Notice of Proposed Rulemaking from the Environmental Protection Agency illustrates the tough choices that we will now face. I am quoting from a document issued on April 17 of this year, in which the EPA warned users of CFC–113, an ozone-depleting industrial solvent, in the following manner:

> The agency does not want producers and users to replace CFC–113 with solvents that are also considered ozone depleters or probably human carcinogens. The chlorinated solvents under regulatory scrutiny by EPA include methyl chloroform, methylene chloride, perchlorethylene, trichlorethylene, and carbon tetrachloride.

We wonder what the affected industries will do. EPA did not say. On behalf of the thousands of local activists who struggle to get Superfund sites cleaned up, to have hazardous waste facilities safely sited, and to reduce industrial chemical emissions, we are urging Congress to act now to prevent these eleventh-hour efforts to protect the ozone from transferring risks of concern from the stratosphere to our workplace and our communities.

We have submitted for your consideration a safe alternatives policy that is a proposal based on widely recognized preventative environmental protection principles such as toxics use reduction.

There are three elements in our proposal: First, a clear definition of safe alternatives that is based upon the premise that we should not be shifting risks from one area of the environment to another; second, a plan for identifying what those safe alternatives are; and, third, a prohibition on chemical substitutes or technologies for ozone-depleting chemicals that do not meet fundamental safety criteria that we discuss, and where there are uses that are considered safe that meet those criteria available for substitution.

There has been much loose talk about the safety of the substitutes for ozone-depleting chemicals, particularly among those in industry and from the Bush Administration. Nobody is more concerned about this issue than the people who are working in their local communities to make them environmentally safe.

We believe it is critical that Congress confront this issue head-on with a plan such as ours that meets all the safety concerns without impeding the rapid chemical phaseout that is necessary to revive the ozone layer. We do not want to see safety become a buzz word for delay in the protection of the ozone.

Presently, of the bills that are before us for consideration, S. 872 sets the pace in this regard of safe alternatives. We hope the committee will recognize the gravity of the situation and invite us to work together to incorporate a safe alternatives policy into all ozone protection legislation.

Senator **GRAHAM** [assuming chair]. Thank you very much, Mr. Walsh.

Ms. Russell.

STATEMENT OF CHERYL RUSSELL, DIRECTOR, ENVIRONMENT AND OCCUPATIONAL HEALTH, AMERICAN ELECTRONICS ASSOCIATION

Ms. **RUSSELL**. I am speaking here on behalf of the American Electronics Association, and before I start on what I had planned to say—I would have to discuss it with my members first but I think we would endorse the three-point plan that PIRG has just discussed. The safety of substitutes is one of our biggest concerns in the electronics industry.

I would like to go back to what I had planned to say for a moment. First of all, the American Electronics Association supported the Montreal Protocol when it was first accepted and signed. We also endorse strengthening of the Montreal Protocol by expanding the list of chemicals covered, by increasing the level of reductions and accelerating the pace of phaseout.

The electronics industry, over the last 3 years, has found some solutions to the CFC problem. We now use deionized water, we use terpenes, we use alcohols, we use a range of different chemicals for some of our different uses of CFCs.

Unfortunately, one of the problems is that technology is not easily transferable from one segment of our industry to another. We have an extensive range of uses. We estimate there are somewhere between 100 and 200 separate electronics applications for CFCs.

While we have made significant reductions so far, and we expect more in the next 2 to 4 years, we are concerned that somewhere in the next 4- to 5-year time period, we are going to hit a stage where we have tried all the substitutes that are available. We are already finding that problem in some applications now. So the electronics industries very concerned about the substitute issue.

We are asked repeatedly about fees and cost. Costs and fees are not the electronics industry's major concern; substitutes are. The cost of a substitute is going to be much less for us than product redesign, process changes, changing the other chemicals and materials that we use in some of these very small parts in order to use a new substitute. All of these things are likely to cost much more than the substitute compound itself.

Before I leave that subject, however, I will say the industry does oppose auctions because they will disadvantage small users. Eighty percent of AEA's 3,500 members are small companies, and we think that auctions will create an administrative burden and economic hardship for these companies.

The next point that I wanted to cover—I only have two more—was the health and safety point, and I think PIRG has done an excellent job of that. I think the only thing that we would add to the plan for finding safe substitutes is to see any compound that is offered for sale as a CFC substitute or a substitute for TCA or the halons should have on its materials safety data sheet what the ozone-depletion potential is for that compound. As chemical users, it is very difficult for us to determine what may be a better alternative than what we are already using.

We have already spent a lot of time, money, and energy eliminating things like carbon tetrachloride and TCE from use in our industry. We use very little carbon tetrachloride and only moderate amounts of TCE. Unfortunately, the replacement for those compounds in many instances was CFC-113. We now have to find another option.

The last point that I would like to address with you is the military specifications problem. This may be the biggest hurdle the electronics industry faces. Too often this problem is reduced to the issue of simply cleaning circuit boards. That is not the problem at all. Once again, there are 100 different applications that military specifications apply to.

Sometimes people think that military specifications are some sort of mythical item. This is not the case. The very front page of this military spec requires the use of TCA, or methyl chloroform, which is listed in the Chafee bill. It includes the use of methylene chloride, which is one of the potential carcinogens that was just mentioned here. The mil spec also requires the use of CFC-113.

We look at this as not just a technical problem that we are going to have to solve over the next few years but also a bureaucratic problem. We have contracts with the military that last for 10 and 15 years. We make NASA shuttle parts, we make gyroscopes, guided missile systems, and a host of other military products.

Any sophisticated measurement or tracking equipment—an oscilloscope or a radar that requires a screen or a CRT—is now made with CFCs. These are some of the applications which we feel are going to be difficult to replace.

What would be helpful, if we want to eliminate the use of ozone-depleting compounds, is for the military to help us draw up a list of all the military specs that now require the use of ozone-depleting chemicals. We believe once such a list has been completed, the military and NASA should share some responsibility for a research program to address these applications.

At the same time, DOD and NASA should be asked to institute a plan now for handling the revision of contracts as substitutes are developed and to expedite the wholesale reverification of the long list of products AEA members now manufacture for the military. This is going to take a lot of time, and it is our single greatest timing problem as far as CFC replacement is concerned.

I am sorry, I see the red light. If we have a chance to discuss import ban later with Senator Chafee, I would like to do that.

Senator **Baucus** [resuming chair]. Thank you very much, Ms. Russell.

Next, Mr. David Doniger, Natural Resource Defense Council.

Mr. Doniger.

STATEMENT OF DAVID DONIGER, SENIOR ATTORNEY, NATURAL RESOURCE DEFENSE COUNCIL

Mr. **Doniger**. Thank you. I am here with Dr. Daniel Lashof, our Senior Environmental Scientist, who was formerly with the EPA and an author of the recent EPA study entitled "Policy Options for Stabilizing Global Climate."

I would like to present a reaction to discussion about whether the U.S. government is advocating a package of controls which is sufficient to protect the ozone layer.

The most stringent package in the EPA presentation which you just saw is one which phases out CFCs and halons by 2000; phases out methyl chloroform and carbon tetrachloride by the same date; and implicitly has some restrictions or limitations to keep the growth rate and the ozone-depletion potential of the substitute chemicals from being too high.

If we adopt that entire package, we do not stop the growth of ozone-depleting chemicals in the stratosphere until 2010. We do not get back even to today's level of contamination until 2070, and we do not get rid of the Antartic ozone hole until well into the 22nd century. This is a very long time. We are all going to be gone by then.

Can we do better than this? What controls would speed things up?

There was a question earlier, what difference would it make to bring forward the time of the phaseout for CFCs, to make it earlier than the year 2000? Dr. Lashof's calculations from the EPA data show that if we had the phaseout in 1995 instead of 2000, we could save almost 20 years in the time it will take for the recovery of the stratosphere to current levels of contamination.

Also, from a global greenhouse perspective, if we advanced the phaseout to 1995, it would make a 5 percent difference in the amount of extra global warming gases we are going to have in the next decade. That is more impact than can be achieved in the next decade from doubling the transportation sector's fuel economy by the year 2000.

Senator **Baucus**. I am sorry, what is that last point again?

Mr. **Doniger**. A CFC phase by 1995, rather than 2000 would mean a 5 percent benefit on the global warming side, in terms of cutting the increase in global-warming gases coming over the next decade, and that is more impact than would come from a policy of doubling fuel economy by the year 2000. So there would be a major benefit on both the ozone side and the greenhouse side from advancing the date of the phaseout.

The second issue I would like to mention is that we firmly believe alternative chemicals known as the hydrochlorofluorocarbons and hydrofluorocarbons, the HCFCs and HFCs, should be brought into the international protocol and into U.S. domestic rules and regulations now, although not on the same terms of phaseout as the other chemicals. What we are saying is there should be an indication now of how much these chemicals can grow, at what rate, and for how long. That should be set now so that the incentive will remain for everyone to continue looking for better answers.

NRDC has asked the EPA to examine what impact would there be from capping or phasing out the HCFCs at some range of dates in the early part of the next century. We think that this would result in bringing yet farther forward the date at which the stratosphere recovers to its current debilitated state. It would also bring forward, hopefully, into the next century when we could expect the Antarctic ozone hole to go away. These are very important steps that could be taken in addition to those which the EPA analysis suggests.

Turning to the issue of a regulatory fee, NRDC strongly supports S. 503's proposal to have a fee and a trust fund which would target a portion of that money—hopefully, a large portion of that money—back into joint projects between the public and the private sector that are going to come up with better answers for protecting the ozone layer, reducing energy consumption, and promoting alternative energy sources.

This fee would recoup the $2–7 billion windfall profit that CFC and halon producers are expected to make in the next decade. It makes no sense to us that the chemical companies which are mostly responsible for creating the problem we are in should enjoy a windfall benefit off the solution to that problem.

Finally, we are in favor of enacting specific measures now to promote recycling and efficiency in the use of ozone-depleting chemicals. Despite their fact that their price is projected to go up, some industries are not reacting as fast as they might. There are some near-term emission reductions which could be achieved with targeted Federal controls.

NRDC is working with a number of States, for example, on automotive air conditioning recycling. We are finding that in a number of States it is moving forward. But it is an inefficient process to move a program like that State by State.

Vermont and Hawaii have passed legislation already. We are working with legislators in ten other States to do likewise. But targeted Federal recycling controls would be a major advance in terms of recovery of the stratosphere.

Thank you.

Senator BAUCUS. Thank you very much, Mr. Doniger.

Dr. Glas.

STATEMENT OF DR. JOSEPH P. GLAS, DIRECTOR, FREON PRODUCTS DIVISION, E.I. DU PONT DE NEMOURS CO.

Dr. GLAS. Good afternoon, Senators.

My name is Joseph Glas. I am director of the Freon Products Division of DuPont.

As we have testified earlier, DuPont is committed to phase out its production of fully halogenated chlorofluorocarbons and halons as soon as possible but no later than the turn of the century. To assure that the transition away from CFCs does not disrupt uses considered essential by society, we are aggressively pursuing alternative products which offer similar properties to the CFCs but have little or no potential to affect the ozone layer.

Based on our 15 years of research costing over $100 million, we have identified a number of compounds which have the right combination of physical properties to replace the CFCs in their current uses. Even so, all of these candidates represent a compromise when compared to CFCs, whether it be in flammability, toxicity, energy efficiency, suitability for existing equipment, or performance in use.

We are working hard to develop cost-effective processes to make these products. One measure of our commitment is a research and development effort that will total $45 million in 1989. We are participating in studies to confirm that the alternatives are environmentally acceptable and safe for use.

We are providing sample quantities to the using industries from six operating pilot plants, and we are building a $25 million plus commercial facility scheduled for completion and start-up late next year. DuPont is undertaking all of these efforts without knowing whether the alternatives will be accepted in the marketplace or by society.

The actual timing of the conversion from CFCs to alternative products will be determined by the using industries, not the producing industry. Even if we had large capacity in place for the alternatives today that we are working on, and the toxicity and regulatory uncertainties were resolved, there would be no immediate market for these new compounds. The simple reason is that the existing equipment which accounts for 80 percent of the market for CFCs cannot operate with our substitutes.

But we are cautiously optimistic that the users will develop new equipment designs and applications technology over the next 3 to 5 years which can use our substitute products. If so, a turn of the century transition away from CFCs is possible. On the other hand, a 5-year phaseout schedule would undoubtedly lead to a shutdown of most of the $135 billion worth of existing equipment which is now serviced by CFCs.

This highly uncertain business environment has been aggravated by threats of taxes, fees, or auctions on the CFCs, as well as possible regulation of the alternative products. A little over a year ago, when we told you of DuPont's intent to phase out its CFC production, you offered to remove roadblocks that might slow the phaseout process.

The proposals you have asked us to comment on today raise roadblocks rather than remove them. The possibility of taxes, fees, or auctions on CFC production will threaten survivability of certain market segments. The tax proposed by the administration would be passed down a very long distribution chain, more than tripling the cost of CFCs to users before alternative products are commercially available to them.

A tax would also divert resources needed by producers, but particularly by users, to restructure their businesses for alternative products or technologies.

We would view a tax on CFC production as a negative signal from Government that you truly do not value our substantial research effort which is being funded by the revenue derived from the CFC business. Further, such a tax would diminish our financial capability to fund the construction of alternative manufacturing plants.

A second roadblock is proposed regulation of the HCFCs, the very products our assessments indicate are necessary to accomplish an orderly transition away from the CFCs. In the year 2000, our best estimate is that a combination of conservation, recycle, and non-chlorine-containing products and technologies will replace about 70 percent of the CFCs now in use. The HCFCs, however, are uniquely essential to replace the remaining 30 percent.

With an average of only 3 percent of the ozone-depletion potential of CFCs, the alternatives we are offering, including HCFCs, are a key factor in reducing chlorine concentrations in the atmosphere and achieving a rapid phaseout of CFCs.

Possible regulation of the HCFCs would likely delay investment by both producers and users. We estimate that the investment required by DuPont to restructure its U.S. business would exceed $1 billion over the next decade. It would be difficult for us to consider such a huge investment if the products in question were to be capped or phased out before the end of their normal 20- to 30-year life cycle.

We strongly urge the Government to remove these potential barriers to a rapid CFC phaseout and an orderly transition to alternatives and concentrate on encouraging the use of alternatives.

Thank you.

Senator BAUCUS. Thank you very much, Dr. Glas.

Next, Mr. Peter Likes.

STATEMENT OF PETER LIKES, VICE PRESIDENT, HUSSMANN CORP., ON BEHALF OF THE ALLIANCE FOR RESPONSIBLE CFC POLICY

Mr. LIKES. Thank you, Mr. Chairman.

My name is Peter Likes. I am vice president of the Hussmann Corporation, a commercial refrigerator manufacturing company in St. Louis. I am appearing today on behalf of the Alliance for Responsible CFC Policy, a coalition of users and producers of chlorofluorocarbons in the United States.

We appreciate the opportunity to appear before your committee and present our views concerning the several pending bills dealing with stratospheric ozone protection and global climate change. I will try to briefly summarize the key points from our written testimony.

In September 1988, the Alliance announced its support for the acceleration of the Montreal Protocol assessment process and the negotiation of a phaseout of the controlled substances to the maximum extent feasible while taking into account the availability of safe substitutes and the needs of existing installed equipment.

I would note that at the recently concluded first meeting of the parties to the Protocol, the Helsinki Declaration was issued, which called for a phaseout by the year 2000, and that President Bush has announced his support for a phaseout by the same year, so long as safe substitutes are available.

Based on the technical information currently available, it is not possible to specify whether or not the complete phaseout of the need for the CFC compounds is achievable by that time. Research and development programs are under way in every industry segment to achieve the phaseout of the reliance on these compounds as soon as possible.

A critical issue concerning the existing installed equipment base and special national security-related needs is currently under investigation by industry and EPA to ascertain just what is achievable and when.

It appears that a strong interest is growing among parties to the Protocol for a CFC phaseout by the year 2000. It is evident from the research programs under way, and even from EPA's own recent testimony, that substantial progress is being made but that we are not going to have the answers to these questions prior to the second meeting of the Protocol parties scheduled for April 1990.

It is clear that the Protocol has achieved the intended effect of providing the incentive and the means for the development of ozone-protecting technologies. In view of the aggressive research programs under way in the United States and among industries worldwide, the Alliance believes there is no need currently to adopt additional unilateral legislation in this country.

In sum, the process is working remarkably well, particularly in light of the scientific and technical complexities involved with the issue. In fact, the current legislative proposals would appear to undermine rather than enhance the work being done by industry to assure an orderly transition from the CFC compounds into safe substitutes with a minimum of economic losses to society.

With respect to the current proposals to use the CFC regulatory mechanism as a revenue-raising device for purposes of deficit reduction, as specifically proposed by the Office of Management and Budget and also included in some of the bills before the committee today, we believe that such an approach will create substantial additional costs to the user industries and to consumers far in excess of the costs anticipated to be experienced as a result of the Montreal Protocol.

It is unfair to pass these costs through to user industries that have no realistic alternative to turn to currently. This is inconsistent with the principle in the Protocol of a reasonable transition period into the new compounds.

The United States is the only major Protocol participant that proposes to disadvantage its industries by taxing them at the same time that industry is striving to develop globally competitive technologies. This tax proposal threatens what is perceived as the current U.S. lead in these technologies.

The Alliance is pleased that the legislative sponsors recognize the tremendous research and development effort necessary to identify and implement ozone-protecting technologies. Industry has already initiated multi-million-dollar research programs in many different fashions on production and utilization of substitute compounds and technologies and recycling of the current compounds.

We are uncertain that a large government research fund could produce significant benefits in a timely fashion and urge that the Government and industry work together to identify these needs before a fund is created that may otherwise only inflate costs to all consumers.

Finally, it is apparent that the industry is exploring a variety of means to protect the ozone layer, including better conservation practices, the use of "not-in-kind" substitution, as well as the family of compounds known as HCFCs and HFCs.

In the cooperative spirit of the Montreal Protocol, the CFC-using and producing industries are pursuing an aggressive program to heed the calls for a rapid phaseout of CFCs. Unilateral legislative and regulatory proposals that create conflicting regulatory requirements or burdens, such as deficit reduction and control limitations on substitute compounds, should be avoided. They will only hamper our ability to achieve the Protocol's primary goal of protecting the ozone layer and U.S. industry's competitiveness in the global economic market.

We remain committed to this process and encourage your continued oversight efforts to assist in its overall success.

Thank you.

Senator BAUCUS. Thank you very much, Mr. Likes.

The next witness will be Mr. Jelin. Mr. Jelin, the majority leader regrets his absence. He would like to be here for your testimony. He also told me to tell you he very much appreciated your testimony a year ago when you testified before this committee, and he looks forward to seeing the written version of your testimony.

Thank you. Why don't you proceed?

STATEMENT OF WILLIAM JELIN, PRESIDENT, NRG BARRIERS, INC. ON BEHALF OF ENERGY EFFICIENT INSULATION MANUFACTURERS

Mr. JELIN. Mr. Chairman and members of the committee, my name is William Jelin. I am from Kennebunkport, Maine, which is a small, until very recently obscure, fishing village on the coast of Maine.

I cannot go home this weekend because I understand half the people from Washington and Paris, for that matter, have invaded the place.

I am the founder and president of NRG Barriers. I am proud to claim that we manufacture the most efficient energy- saving insulation known to man.

With me today are two of my competitors, Dennis Ross and Lorraine Aulisio of the Jim Walter Company.

The technical name for our product is polyisocyanurate rigid foam insulation. There are eight manufacturers of this product in the United States. Some are fairly large companies; others, like mine, are rather small, family-owned companies that produce only this product.

My father and I started the company 14 years ago when we bought a piece of equipment at a bankruptcy auction in an antiquated mill in New England.

Our little company in Maine has done well, ironically, because, beginning with the energy crisis in the early 1970s, the demand for energy-efficient buildings has grown at a rapid rate. Today over 50 percent of all new residential and commercial construction utilizes our energy-efficient product. Other currently available insulations are clearly—you can see the picture—clearly not that efficient.

Simply put, from a heat-retention and energy-saving perspective——

Senator BAUCUS. Are you going to explain that chart?

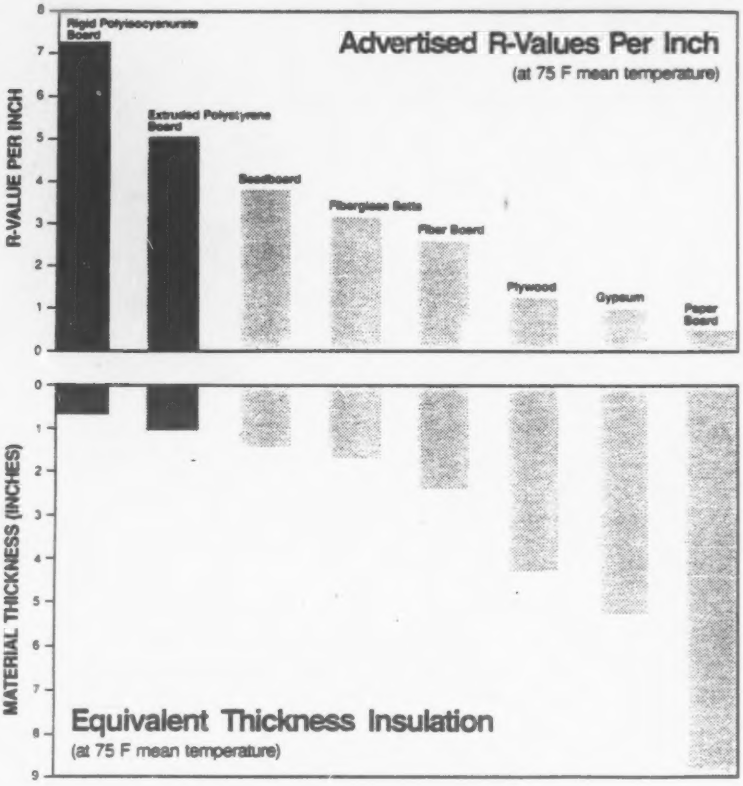
Mr. JELIN. Sure.

Senator BAUCUS. What is the difference between red and blue?

Mr. JELIN. The red products are products containing CFCs, rigid-board polyisocyanurate insulation. The second column is extruded polystyrene. The other blue columns are the more classical types of insulation. The bottom, or the inverse side of it, shows the thickness of insulation that one would need to put in a building system in order to achieve the same levels——

Senator BAUCUS. What is the point of that chart? What is the message?

SUPERIOR ENERGY EFFICIENCY OF POLYISO INSULATION BOARD



Today, Insulations Containing CFCs Are Used In:

60% of New Commercial Construction
50% of New Residential Construction
30% of Reinsulation of Existing Buildings

Mr. JELIN. The message of the chart is to show that, presently, the alternatives to insulation that are available do not hold a candle to the insulation value of our product.

Senator CHAFEE. If you go to the last column there that shows the long blue line descending, I take it that it requires that much thickness in inches—I cannot see your vertical scale, but I take it it takes that much in inches to achieve up above the little blue increase, the little blue above the line, that much insulation. Am I correct?

Mr. JELIN. It takes 9 inches of paperboard insulation to achieve the same insulating value in about three-quarters of an inch of our product.

Senator CHAFEE. I see.

Senator BAUCUS. And your products are virtually similar, you and your competitors?

Mr. JELIN. Yes. We all have some competitive differences.

Senator BAUCUS. Yours are better?

Senator CHAFEE. Whereas, over on the left, it shows that, going below the line, a very little bit of your type of insulation produces those extraordinary results that you show on the upper left, is that right?

Mr. JELIN. Yes, sir. I am glad you paid so much attention. We paid a lot for the chart.

Senator BAUCUS. Your time is up.

Mr. JELIN. Mr. Chairman, I am an environmentalist. I guess it comes from coming of age in the sixties or maybe skiing in Vermont, as the Senator also talked about earlier today. But my business is also tied to the policies which require energy conservation.

I support your efforts to reduce global warming not only because I am environmentally sensitive but because the efforts to reduce global warming will require even greater dependence on our energy-efficient building materials, and that is my business. It is my business, but the reason I am here today is to ask you to let me stay in business until the chemical companies give us a substitute CFC.

The EPA's approach to reducing CFC usage has been an economic one: Drive up the price and reduce demand. Please recognize, however, that reduction in demand will be borne almost exclusively by the most inelastic and price-sensitive products, namely energy-efficient insulation.

I applaud Senator Durenberger's comments earlier this morning. He understands that the windfall-profits tax will be passed on to the users of the product. I think we have to do some work on it, but I would like to work with the committee closely on trying to develop what Mr. Durenberger talked about earlier today, even though we don't make the stuff in Minnesota.

If our government policies do exacerbate the already- delicate price situation, we simply will not be able to survive.

Why should Congress worry about this? Well, there are a couple of good reasons, and I will go through them quickly. First and foremost, our product saves a tremendous amount of energy and the sizable environmental costs of producing that energy.

Let me pose just one short scenario. Suppose a fee is imposed today on a product and drives us out of the marketplace. Commercial and residential construction will go forward without our product, using old-fashioned types of insulation.

According to the Department of Energy's own study, buildings and houses constructed with old-fashioned types of insulation will, in the course of their lifetime, consume 58.6 million additional barrels of oil if our product is no longer available.

If no CFC substitute is found until 1994, the total waste of oil rises to 234 million additional barrels of oil. That translates into 160 additional Exxon Valdez-type tanker loads being delivered to our shores.

Secondly, the millions of——

Senator BAUCUS. I am going to have to ask you to summarize very, very briefly.

Mr. JELIN. All right.

Finally, in closing, Mr. Chairman, I would like to leave you with just one thought from Theodore White in his last book, "In Search of History." He talked about the lessons that we have learned in his over 40 years of covering the affairs of government. He learned, he said, that one of the prevailing laws of nature to be feared most by those who make government policy is the law of unintended consequences.

I hope you will take this law into consideration in your deliberation.

Thank you very much, gentlemen.

Senator BAUCUS. Thank you very much, Mr. Jelin.

Our final witness is Ms. Marilyn Montgomery with Genetron.

STATEMENT OF MARILYN MONTGOMERY, VICE PRESIDENT AND GENERAL MANAGER, GENETRON UNIT, ALLIED-SIGNAL CORP.

Ms. MONTGOMERY. Thank you.

Mr. Chairman and Senator Chafee, I am Marilyn Montgomery, vice president and general manager of Allied-Signal's Genetron Business Unit. I have submitted a lengthy statement which I would ask to be placed in the record.

Allied-Signal has called for the virtual elimination of CFCs by the year 2000 provided safe substitutes are available. We support modification of the Protocol for this purpose.

There is a tremendous effort under way in this country and around the world to accomplish a rapid transition to safe substitutes. The producers are only a part of this effort. We cannot forget that thousands of CFC users are being forced away from products that they have known for decades to ones that are not yet even commercially available. This is a tremendous undertaking, and U.S. policies have to take this into account.

We also need to remember that CFCs were invented 50 years ago because existing refrigerants and solvents had health and safety problems. Today the benefits delivered to society by various uses of CFCs are taken for granted, but these benefits are crucial to our standard of living. We do not want to find ourselves in a position of having left important needs unmet at some point in the future.

At Allied-Signal, we have intensified our research program. In my prepared testimony, I have cited just two of many examples where it appears that promising substitutes have been found. We are also involved in international organizations undertaking studies of the health and environmental effects of the substitutes.

The Protocol was negotiated with an understanding that the world needed time to transition from the controlled products to the substitutes. The negotiations recognized that this transition would not and could not occur overnight. The transition challenge not only involves developing new applications technology but also addressing the need of over $100 billion of in-place equipment which uses CFCs and will have productive lives beyond the 1990s.

Today I want to address specifically, first, the economic penalties on producers and users that you have under consideration; two, proposals to accelerate or broaden the regulations in the United States; and, three, the need to make substitutes available as swiftly as possible.

On the economic side, the prices of CFCs have increased in the last 6 months, as the EPA anticipated in its regulations. Increased prices are providing incentives for conservation and substitution. Momentum exists in the marketplace to reduce chlorofluorocarbon usage. We see this daily.

In the not-too-distant future, we see overall demand being reduced. It is quite likely that responsible producers, particularly those investing heavily in the future and helping the users transition to substitutes, may face some years of economic hardship.

Any type of fee or tax is a penalty on the economy. It simply removes resources needed for research to develop products and processes that utilize substitutes and transfers them to the Government. The net result is that American producers and users have less capital available to them to help transition into substitutes and are immediately disadvantaged against their foreign competition. There is no way that increasing taxes on industry accelerates the introduction or use of safe substitutes or protects the environment.

With regard to proposals to accelerate or broaden regulations in the United States, the U.S. Environment Protection Agency presented at the UNEP meeting in Helsinki information that accelerated reductions in chlorine emissions will result in almost no change in eventual chlorine levels. Their studies indicated that reductions in eventual chlorine concentration can best be accomplished by completing the phaseout by the year 2000 and adding two compounds to the list of controlled substances.

The effect of front-end action by the United States to accelerate or deepen the cuts would be to disadvantage U.S. business for no apparent environmental reason, while our competitors abroad take advantage of a more orderly transition period.

Discussion of regulating HCFCs before they are in many cases even commercially available causes us and our customers great concern. HCFCs have very low ozone-depletion potentials in comparison to the products they are replacing. Work has been under way with many users to develop end-use application technology using these products.

Early availability of the HCFCs is critical to achieving orderly CFC reduction in the short term. Unfortunately, the momentum under way to switch to these products has been slowed by talks of regulating them. We need to remove the cloud of uncertainty with regard to substitutes as soon as possible so that the momentum to switch over to them will again pick up.

It is not business as usual at Allied. We are compressing steps that normally occur sequentially in the development process into simultaneous ones, and we expect to spend well over a quarter of a billion dollars to commercialize the products that we need.

We are very concerned that the legislation before the committee related to ozone depletion, however well intentioned, would, if enacted, hurt our economy, have little or no effect on the environment, and potentially delay the introduction of substitutes.

U.S. producers and users operate on a global economy. The Montreal Protocol attempted to level that playing field for all competitors. U.S. efforts to exact economic penalties from producers and users to accelerate the Protocol or to put a chill on the use of substitutes shifts that playing field away from this country. The result could well be a loss of U.S. competitiveness and jobs, not environmental protection.

Senator BAUCUS. Thank you very much, Ms. Montgomery.

The basic question, it seems to me, is what do we do to assure the most expeditious development of substitutes and to phase out CFC production, methyl chloroform, and carbon tetrachloride as quickly as possible? That is basically it, as I see it. Is there any disagreement with that? I don't see much.

In 1970, this country was faced with automobile pollution, and in 1970, essentially, the Congress said to the automobile industry that even though you do not have the technologies present today, we want you, the automobile industry, to reduce tailpipe emissions—I think it was carbon monoxide, hydrocarbons, nitrogen oxide—by 90 percent. The technology did not exist at that time to do so.

Nevertheless, this country thought it was important enough to mandate those reductions; that is, to force the changes, force the technology to be developed. I think later on only the nitrogen oxide standard was reduced, I think down to about 70 percent. Still the hydrocarbon and the carbon monoxide standards were maintained. Essentially, the auto industry was basically able to do it. It was told to do it and it has basically done it.

I am really driving at this loophole that we are going to reduce or we are going to phase out CFCs, et cetera, by 2000, so long as substitutes are available. In 1970, this country did not say that we will reduce tailpipe emissions by 90 percent so long as technology is available.

This world is run by deadlines. Sometimes it is human nature not to do something until you have to do it. And also, it is becoming increasingly clear to me that the mandated environmental technologies also have two benefits. One is better environmental protection. A second major benefit is the companies that develop these environmental technologies also very significantly increase their productivity. That is, it is an opportunity for a company to find new ways to modify its processes, its plants, or whatever it does. It increases productivity, in fact, manufacturing technologies or processes which are more competitive worldwide than was earlier the case.

So my question really goes to what is wrong with this Congress saying and the United States advocating successfully, hopefully, in a new protocol that we are going to phase this stuff out, period, by the year 2000? What is wrong with that? Anybody?

Mr. DONIGER. Senator, I think it is absolutely essential that we do that. I want to expand on two points about the Helsinki meeting. First, many of the witnesses here have made it seem as though we were still in the old mode where the United States was in the lead in terms of its concern for this issue and other countries were being dragged kicking and screaming into commitments to deal with this problem.

Sadly, the situation is now reversed. At least several of the major countries in Europe are already committed to virtually complete phaseouts in 1995. I am talking about West Germany and Sweden and Norway as three in particular.

Senator BAUCUS. On that point, West Germany, Norway, and Sweden are now phasing out CFCs?

Mr. DONIGER. Virtual complete phaseout——

Senator BAUCUS. By 1995?

Mr. DONIGER [continuing]. By which they mean 95 percent or better by 1995. And they take this as——

Senator BAUCUS. Despite the agreement of other countries in Helsinki to phase out generally by 2000?

Mr. DONIGER. The agreement says that they would phase out as soon as possible but not later than 2000——

Senator BAUCUS. I see, all right.

Mr. DONIGER [continuing]. Which preserves the opportunity to argue, through the course of the Montreal Protocol revision process next year, over what that date should be. There are countries in Europe and elsewhere which are arguing for earlier dates than the United States, and than the European Community is doing so as a whole.

In that context, the United States delegation came into Helsinki making a very big point of the caveat which Senator Lieberman and Mr. Rosenberg talked about earlier. They gave quite a different impression from that given in the London conference in March, where the policy was first announced. Because of his smoothness—and I mean this as a compliment—Mr. Reilly was able to emphasize the 2000 year deadline and de-emphasize any importance or a real magnitude to the proviso.

Well, when Mr. Berenthal and others continued to press the issue of getting the caveat about safe substitutes into the Helsinki declaration, I was approached—as though I should know—I was approached by delegates from nations, asking me what the explanation was for the U.S. backtracking.

The impression was broadly created in Helsinki that the United States was hedging on its commitment made only a month before in March. Now, I understand that the words of the President's commitment were the same in both places, but the tone of the presentation was different in the two places.

Senator BAUCUS. Mr. Glas or Mr. Likes, I would like you to comment on my devil's-advocate proposition.

Mr. LIKES. Senator, if you look back in time, the development of many, many products making use of CFCs began some 50 years ago and proliferated and has done things for the benefit of all humans, which is a wonderful thing.

If you accelerate now or compress the development of new products and replace those old products within a period of perhaps 5 years or so, it is something that we have to do very carefully.

I share your concern. I, too, have been to the skin doctor and have had things removed from my head. I have also noticed over a period of years that we have been able to get away from problems of toxicity with regard to refrigerants which we use in our business. We do not want to go back to those kinds of problems again or make any mistakes as we develop new opportunities here.

I believe this does provide us—industry, certainly—with a lot of opportunity to develop new things, but it must be done on a timely basis, and certainly for the benefits that we have also picked up over the last 50 years.

Senator BAUCUS. But what is wrong with just saying, "Okay, this is it, no later than the year 2000, period"?

Dr. GLAS. In the case of Du Pont's position, there is no qualification. The turn of the century——

Senator BAUCUS. You can do it?

Dr. GLAS. Well, we can phase out. Then the issue becomes what do you phase in and who uses what, so that——

Senator BAUCUS. But doesn't the absolute deadline help encourage us more quickly to develop safe substitutes?

Dr. GLAS. I think it gets the message through that you have got to take action, and it has to be aggressive action, but it has to be action. And so then the need for society is to understand how we do it, what goes first, how we manage this very difficult transition, and what we transition to.

Senator BAUCUS. Thank you.

Senator Chafee.

Senator CHAFEE. Thank you, Mr. Chairman.

I support what you say, Mr. Doniger, but I would point out, before we get too enthusiastic about the Europeans, that they have never yet adopted the 100 percent phaseout or the elimination of the CFC, in the simplest of all activities, the aerosol cans. So let's not put them on too high a pedestal, because they can get down to 95 percent reduction easier than we can.

I am sympathetic to your program, but I want to put it a little bit in perspective.

Mr. DONIGER. Just one sentence. Those countries still have the same problem of getting out of refrigeration and solvent use and all the hard uses, too, and those three countries I named are prepared to do that, and the Scandinavians got rid of the aerosols about the same time we did.

Senator CHAFEE. Yes.

This has been helpful. First of all, for any who are wondering what we might do here, I am convinced that in this Senate and in this Congress, we are going to go for the total ban, whether the substitutes are there or not.

I think the principal point that has been raised here by this panel, to me, in any event, is the question of the fees, taxes, however you want to phrase it, situation. It deserves very, very careful attention, and certainly we are going to try to do that.

I think Mr. Jelin talked about the law of unintended consequences. We try to be conscious of that around here, but we get into it all the time of unintended consequences. Both the chairman and I sit on the Finance Committee, and where you take a step in one direction, either eliminate an incentive, whether it is a credit or a reduction or whatever it might be, and it has ramifications that sometimes you are never aware of down the line. So we will proceed very carefully with that particular portion of what we are talking about.

I would ask this of Ms. Montgomery. First of all, I want to say that I have been following what Du Pont and Allied have done, and I want to praise you. You folks have put a lot of money into this. You are serious about it. You have done more than just talk about it, so I think, speaking as one member of this committee, we are very pleased with what those two companies—and I am more conscious of those two companies than I am of others. Others may have done well, too. Mr. Likes, your company, I am not so familiar with that.

But I would ask this of you, Ms. Montgomery. There have been requests that the HCFCs not be regulated, and I think you said that, too, Dr. Glas. But don't they, down the line, present all the problems we have with the CFCs? We saw the charts here. We heard from Dr. Watson. Pretty soon, if we don't have some controls on the HCFCs, we are going to be right back where we are now with the CFCs. Isn't that correct?

Ms. MONTGOMERY. I would suggest that the HCFCs usage should be monitored. It does have implications that we do want to take care and watch for.

Senator CHAFEE. I mean, it certainly showed on those charts. You saw those——

Ms. MONTGOMERY. Oh, absolutely. They were very good charts, and I thought that Dr. Watson's comments about HCFCs relatively short lifetimes were particularly, pertinent. To the extent HCFCs, might cause a problem at some future time, the solution is not a 200-year event, but a reasonably brief event.

It would make, more sense, to me, to regulate when there might be a problem as opposed to regulating in anticipation of something that may not happen. Regulating now has the potential of slowing our momentum to switch to the substitutes.

Senator CHAFEE. Do you echo that, Dr. Glas?

Dr. GLAS. I would come at it from a slightly different point of view, I guess. My concern had to do with the uncertainty of regulation, so clearing up the uncertainty is going to be important. I was focusing in particular on normal product life cycles.

When an investor chooses to invest substantial money in a product line, he has an expectation of a rate of return for that, and if the product life cycle is shortened because of the threat of regulation, either you have to put a much higher premium at the front end, which is going to discourage the users, or you have to see a normal product life cycle.

It is clear that this debate is suggesting high uncertainty about their future. That uncertainty is going to have to be resolved one way or another. I echo the sentiment that monitoring should be an important feature of the regulatory process so that we know whether they are building up at high rates. Our scenario does not see anything like the rates of growth that the EPA scenario has. The only way we know——

Senator **Chafee**. My time is up, and I will just conclude——

Senator **Baucus**. That is all right. Go ahead.

Senator **Chafee**. I will just conclude by saying that I just do not want to see us or our successors sitting in this committee 15 years from now and dealing with the HCFCs, with the people sitting before them and saying, well, there is a tremendous investment out there in all the equipment; you are not going to be able to put substitutes on it; they are not going to fit that $12 billion of equipment that is out there, and we go through the whole thing that we are going through now with all the pain and difficulty that is associated with it. That is my concern.

Senator **Baucus**. Isn't there some sense in legislating, perhaps, say, a 5 percent cap on the ozone-depletion potential to provide more certainty? I mean, just off the top of my head, it seems to me that there is going to be more certainty the more producers and users know what the rules are. A ban would be the case if it is kind of vague and nobody really knows what is going to happen.

Dr. **Glas**. It adds one certainty but creates another one, and the uncertainty that it creates is, how is that cap going to be allocated around the world? We need to know how that is going to be allocated before——

Senator **Baucus**. But can't we address that at future conventions and protocols? I mean, didn't the earlier Montreal Protocol tend to address at least not substitute allocation but the phaseout allocation?

Dr. **Glas**. My point would be, if that is an uncertainty, it is going to have to be addressed through the Montreal Protocol process because we need a global solution.

Senator **Baucus**. Yes.

Mr. **Doniger**. One way to think about this is that from the perspective of the HCFCs, everybody in the world is an underdeveloped country. You could impose a ceiling or an allowance much as the way there is a growth allowance for the developing countries for the conventional CFCs. That is one way to do it.

Senator **Baucus**. I have no more questions. I want to thank you all——

Senator **Chafee**. Thank you all very much. This is a difficult area, we know.

Senator **Baucus**. I would also like to echo a point that Senator Chafee made with respect to DuPont and Allied because I cannot remember, when there was a major environmental problem, when a company voluntarily on its own decided to phase out the production of a substance that caused a major problem, and I, too, want to commend DuPont and Allied for those actions.

I note that there is testimony here from the GAO regarding EPA's safety assessment of substitutes, and without objection, that will be made a part of the record. (See p. 222.)

Senator **Baucus**. The hearing is adjourned.

[Whereupon, at 12:57 p.m., the subcommittee was adjourned, to reconvene at the call of the Chair.]

[Statements submitted for the record and the bills under consideration follow:]

TESTIMONY OF
WILLIAM ROSENBERG
ASSISTANT ADMINISTRATOR
FOR AIR AND RADIATION
U.S. ENVIRONMENTAL PROTECTION AGENCY
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
U.S. SENATE

May 19, 1989

Mr. Chairman. I am pleased to be here today to testify before your Committee to comment on issues related to the protection of the stratospheric ozone layer, including several legislative proposals you and others have introduced on this topic. Before dealing specifically with these proposals, I would like to bring you up-to-date on activities to implement and strengthen the Montreal Protocol.

STATUS OF PROTOCOL

The Montreal Protocol on Substances that Deplete the Ozone Layer (Montreal Protocol), entered into force in January of this year. This represents an extraordinary effort on the part of many countries of the world to successfully complete their ratification processes in a timely manner. The list of 37 nations who are now Parties to the Protocol includes all of the major CFC and halon producers, and represents nations with approximately 90 percent of the total world production of these chemicals.

The Montreal Protocol, as adopted, requires a 50 percent reduction of specific fully-halogenated chlorofluorocarbons (CFCs) by 1998, and a freeze of halons at 1986 levels, by the year 1993.

However, these limits will likely be strengthened in the near future. In March of this year, President Bush announced that the United States would seek, through the processes provided by the Protocol, a complete phase-out of all fully-halogenated CFCs and halons covered by tne Protocol by the year 2000, providing that safe substitutes are available. The European Community (EC), Japan, the Soviets, the Nordic nations and others have all taken similar positions. In light of this, we do not believe that separate unilateral action on the part of the United States is necessary.

FIRST MEETING OF THE PARTIES

The first meetings of the Parties to the Vienna Convention and the Montreal Protocol were held back-to-back two weeks ago in Helsinki, Finland. These meetings were attended by a total of 80 nations with a number of environmental ministers as heads of delegation. Much of the business meetings involved adopting procedures, establishing budgets, and establishing working groups. Although not in any way binding on the Parties or even an official document of the meeting, of particular significance is that the attendees adopted by consensus a strong statement (Helsinki Declaration) to support additional measures to protect the ozone layer. This declaration calls for a CFC phase-out as soon as possible but not later than the year 2000. We are very encouraged by the response in Helsinki and believe on the basis of the

Protocol's assessment process that the parties will continue to work towards this goal at their second meeting which is scheduled for April 1990.

PROTOCOL ASSESSMENT PROCESS

The Parties to the Protocol have initiated a series of technical assessments as required under Article 6 of the Protocol. These assessments will focus on the scientific, technical, environmental and economic factors relating to ozone depletion. The United States government, industry and academic experts are actively participating in each of these studies. The current timetable calls for these assessments to be completed by August of this year. A committee of representatives of the Protocol parties will then integrate these analyses and develop a set of recommendations that will be circulated to the Parties for their use in deciding what changes are to be made in the agreement.

The technology and economic assessments will focus on the developments both here and abroad in reducing the use of CFCs and halons. The technology assessment is divided into five chapters, each of which centers on a particular use application--solvents, refrigeration, halons, foam, and miscellaneous uses such as aerosols. For each use the assessment will describe the full range of control options including control technologies, recycling, chemical substitutes, process modifications, and product substitutes. The authors will discuss which of these technologies are currently commercially available. For those options still in the research or testing stage, they will discuss the possible timing of their introduction, their likely applicability across different markets, and any outstanding questions that must be resolved before their introduction (e.g., costs, toxicity, flammability, and other environmental impacts).

While it is too soon to know fully what the assessments will conclude, based on our on-going review of the technological developments in the United States, we believe that a complete phase-out of all fully halogenated CFCs and halons by the year 2000 is feasible. We fully recognize however, that for many particular uses of CFCs and halons, outstanding questions (e.g. safety, toxicity, energy efficiency, national security questions, other environmental impacts), still must be resolved over the next several years. Based on current information, we do not believe that a complete phase-out in the mid-1990's as contained in several bills is technologically or economically feasible.

The terms of the Protocol require that these assessments be updated in 1994 and 1998 to provide a timely resolution to these outstanding technological uncertainties, and to give us additional insights in to the scientific aspects of ozone depletion.

ATMOSPHERIC CHLORINE LEVELS

Prior to the meeting in Helsinki, EPA completed an analysis showing the effectiveness of different measures to reduce chlorine in the stratosphere. This analysis was based on atmospheric models that had been reviewed in prior UNEP assessments. Two weeks ago in Helsinki, the United States delegation presented the EPA analysis which showed potential increases in future chlorine levels from CFCs and other chlorinated compounds and the effect that this would have on the stratosphere. Scientists are now focusing on the levels of chlorine in the stratosphere rather than on ozone depletion because recent studies have suggested model estimates of ozone depletion have underestimated the risks from increased levels of chlorine. The EPA analysis showed that in the absence of additional actions to limit ozone-depleting chemicals, stratospheric chlorine levels could increase from under 3 parts per billion (ppb) today, to over 14 ppb in 2100.

A phase-out of CFCs by the turn of this century (2000) would reduce the estimated increase by an estimated 3 ppb to 11 ppb--which would nevertheless be a substantial increase from the level of chlorine in the stratosphere today. In contrast however, estimates of faster and deeper interim reductions (prior to the year 2000) indicate little effect on stratospheric chlorine levels over the 100 year period of the analysis.

To further reduce chlorine levels, we expect that the Parties will also consider other chemicals to strengthen the Protocol. Several of the bills before the Committee contain controls on chemicals that are not now listed in the Protocol. Two specific chemicals that are likely to be offered for inclusion in the

Protocol are carbon tetrachloride (CCl4) and methyl chloroform (1,1,1-trichloroethane). Carbon tetrachloride is a fully-halogenated chemical with an ozone depletion potential greater than 1.0 (compared to CFC-11 and CFC-12). Carbon tetrachloride was not included in the original list of chemicals to the Protocol because it is used in the United States primarily as a feedstock to produce other CFCs. U.S. producers of carbon tetrachloride voluntarily stopped producing that chemical for commercial purposes because of toxicity concerns, although it had been used as a grain fumigant and solvent. Our analysis suggests that this chemical may still be used extensively abroad, thereby contributing an additional 3 ppb to chlorine levels in the atmosphere, which is significant.

Methyl chloroform has an ozone depletion potential of .15 and is widely used here and abroad in electronics and metal cleaning, aerosols, and in adhesives. Revised EPA analyses project that the uncontrolled use of methyl chloroform will increase atmospheric chlorine levels by 3 ppb. This projection is based on estimates that methyl chloroform will be used in greater amounts within the next few years, as the first reduction in the production and consumption of CFCs occurs.

Decreases in carbon tetrachloride and methyl chloroform are projected to reduce chlorine levels in the year 2100 by approximately an additional 6 ppb collectively. Combined with a complete phase-out of CFCs our models indicate that future levels of chlorine would increase to a projected level of 7 ppb, and would stabilize by 2100. The most significant reductions in chlorine levels from the use of these compounds occurs from a freeze in production at 1986 levels, if our estimates of growth of the chemicals are correct.

The Agency has recently promulgated an Advance Notice of Proposed Rulemaking (ANPRM, 54 FR 15228, April 17, 1989), which notifies users and producers of methyl chloroform and carbon tetrachloride that a freeze and/or reduction in the production and consumption of methyl chloroform and carbon tetrachloride, through the Protocol reassessment process, may be forthcoming. While no official government position on these two chemicals has yet been reached, it will certainly be addressed in the forthcoming Protocol negotiations.

HCFCS

Finally, many of the bills also propose to regulate the CFCs that contain hydrogen (HCFCs). The HCFCs include HCFC-22, which is widely used in air conditioning and some foam applications. As a class, the HCFCs also include many of the CFC chemical substitutes currently under development and testing. These include HCFC-123, HCFC-124, HCFC-141(b), and HCFC-142(b).

The EPA has consistently stated that the early availability of the HCFCs is essential if we are to phase-out the fully halogenated CFCs covered by the Protocol in a timely manner. At the same time, since the HCFCs also contribute small amounts of chlorine to the stratosphere, we also believe that it is only prudent to urge that they be used in the most efficient manner possible and that industry continue its efforts to develop a full range of CFC substitutes and alternative products that do not contain chlorine.

The U.S. analysis also looked at the possible contribution from HCFCs to future chlorine levels. It suggested that HCFCs are likely to capture approximately 20-50 percent of the market created by a complete CFC phase-out. Product substitutes, recycling and improved housekeeping measures, and the use of hydrofluorocarbons (HFCs) can potentially satisfy between 50 and 80 percent of the current CFC demand. The analysis shows that the chlorine contribution from HCFCs for this range of consumption would be between 0.6 and 1.5 depending on the market share they attain. If the average ozone depletion potential of the HCFCs used were to decrease from 0.05 (HCFC-22) to 0.02 (HCFC-124), then the chlorine contribution would be further reduced by more than half.

In summary, the analysis suggests that in the absence of further action, chlorine levels would significantly increase. The actual data in the EPA analysis presented in Helsinki states that to stabilize world-wide chlorine at 1985 levels (2.7 ppb), a phase-out of CFCs, methyl chloroform and carbon tetrachloride are necessary, and HCFCs could be substituted for only about 20 percent of the market left by the currently planned phase-out of CFCs.

Based on this analysis, we reiterate our previous position that HCFCs are an essential part of the phase-out of the fully halogenated CFCs covered by the Protocol. At the same time, we believe that they should be selected carefully, and used in an efficient manner, and that the industry continue to work on alternatives that do not contain chlorine. At the suggestion of the United States, data on the production of HCFCs is to be submitted to the Protocol Secretariat to provide a basis for evaluating the likely future role these chemicals may have in contributing chlorine to the atmosphere. We believe that monitoring their use through the collection of data on a global basis is the appropriate course of action at this time. As part of the process leading up to the April 1990 decision on changes to the Protocol, we intend to hold meetings with CFC users and producers, the scientific community, and the environmental community to further assess this position.

Therefore, we fundamentally disagree with including in any legislation the potential regulation of HCFCs.

CURRENT EPA PROGRAM ACTIVITIES

The Agency has expedited efforts to work with industry to identify alternatives to CFCs and halons. Many of the activities supported by EPA are focused on organizing various industry groups so that they can collectively decide how to best reduce and eventually eliminate their use of CFCs. Many of these activities have resulted in the voluntary testing of new chemical or process alternatives, or technological changes in system designs and/or methods so that the use of CFCs can be eliminated. Examples of these activities include some of the following projects:

- **Automobile air conditioning:** January 1989--The Mobile Air Conditioning Society and the Motor Vehicle Manufacturers Association and several other automakers reached a voluntary agreement on an industry standard of purity for recycled refrigerant from mobile air conditioners (MACs), a change which will reduce the demand for pure CFC-12. The use of CFC-12 in MACs account for 19 percent of the ozone-depleting potential of CFCs used in the United States.
- **Energy Efficient Appliances:** EPA is funding several projects that will explore new technologies to increase refrigerator efficiency, including non-fluorocarbon refrigerants, near-azeotropic refrigerant mixtures, advanced insulating panels, and improved mechanical refrigerating cycles.
- **Military Specifications for CFC Solvent Use:** The combined efforts of EPA, the U.S. Department of Defense (DOD), and industry representatives has led to the development of alternative chemicals and technologies that will reduce or even eliminate the need to clean with CFC-113 in certain applications. These results also have led DOD

to issue a department-wide Policy Directive, No. 6050.9, that will decrease DOD's dependence on CFCs and halons. This is significant because DOD is the largest consumer of CFCs and halons in the U.S. EPA has expanded this effort to find substitutes for CFC-113 used not only in electronics, but also in precision cleaning and all general degreasing or metal cleaning uses.

- **Halons**: EPA and DOD have established a government/industry research project that will focus specifically on developing replacement chemicals for halons.
- **Second Annual Trade Fair and Conference**: The EPA is co-sponsoring a second annual U.S. trade fair and conference on alternatives to using CFCs. Particular to this conference will be plenary and workshops sessions on multinational business opportunities in developing CFC substitutes, and on working with developing countries on technology transfer related to the adoption of those substitutes. The conference is scheduled for October 1989.

EPA is concerned that many of the bills require the expedited phase-out of CFCs and halons listed in the Protocol, and reduce the use of other chlorinated compounds not included in the Protocol in a very short time frame. The Helsinki Declaration calls for a CFC phase-out no later than the year 2000. This will provide time for planning, development, and manufacturing to find new chemical alternatives. EPA has in place a process for the expedited toxicological review of all chemical substances that can be used to replace CFCs. It is critical that the Agency ensure that any new chemicals substitutes developed or new mixtures of existing chemicals used as substitutes do not pose different or additional significant risks to human health or the environment, and that the substitutes chosen to replace CFCs are the correct one. An expedited program would not reduce chlorine levels in the stratosphere significantly, or be effective on a global scale. EPA encourages you to support the President's phase-out schedule.

The Agency is also concerned about legislative activities that would establish a new federal bureaucracy or oversight effort that would add to efforts already underway. As you are aware, on May 12, 1989, President Bush announced that the United States will host an international workshop on global climate later this year under the auspices of the Response Strategy Work Group. The meeting will be open to all nations for the purpose of conducting working sessions to identify the scientific, legal, technical and economic issues critical to further progress on beginning negotiations on an international convention on global climate change. The schedule calls for the Response Strategy Work Group to meet in June 1990 and make its report on implementation to the IPCC at that time. For these reasons, among others, the EPA strongly opposes having the United States take any unilateral action on global warming at this time. The Agency will continue to work diligently with other federal agencies on specific research projects that are currently underway.

EPA REGULATORY ACTIVITIES

EPA promulgated its final rule to implement the terms of the Montreal Protocol (53 FR 30566, August 12, 1988). While the final rule relied on an allocation schedule, EPA also issued an ANPRM seeking comment on adding a fee or shifting to an auction to collect windfall profits from CFC producers. This ANPRM was included because the reduction in CFCs called for by the Protocol, would decrease the supply of CFCs available for use. It is anticipated that this decrease in supply would drive up the price of CFCs and that producers would realize projected multibillion dollar windfall profits. This windfall could create an economic disincentive to delay or slow the rate at which chemical substitutes are introduced.

The FY 1990 President's budget also stated that EPA would change its regulations to charge market value for the production and importation of CFCs through either fees or auctions. The EPA believes it has the legal authority to implement either approach under the Clean Air Act. This conclusion is supported by the legal opinion of the U.S. Department of Justice.

CONSUMER LABELING

Several nations are implementing proposals to label consumer products positively, "CFC-free", or negatively as an ozone-depleting substance. EPA is currently reviewing some of these international alternatives along with other proposals. The Agency expects to complete a report on the labeling option this August, and will be in a better position to comment on your proposals for labeling at that time.

I look forward to your continued interest in our efforts related to stratospheric ozone protection and would be pleased to answer any questions you may have.

United States
Environmental Protection
Agency

External Affairs (A-100AE)
Washington DC 20460

EPA

Legislative Analysis

JUN - 6 1989

Honorable John H. Chafee
Committee on Environment and Public Works
United States Senate
Washington, D.C. 20510

Dear Senator Chafee:

Enclosed, for insertion in the hearing record, are EPA's responses to questions submitted to us in the nature of a follow-up to the May 19 hearing on CFC legislation.

Please feel free to contact us if we can be of any further assistance.

Sincerely yours,

A. Henry Schilling
Director, Office of
Legislative Analysis

Enclosure

1. (Q) It has been argued that the relatively low ozone depleting potential (ODP) of methyl chloroform suggests that is should be controlled in the same manner as other low ODP substitutes and not like the potent CFCs targeted for phase-out. Do you agree with this argument?

(A) No. We believe that the availability of the HCFCs with low ozone-depleting potential is essential to an early phase-out of the CFCs. As a result, we do not believe that they should be controlled (see below). In contrast, methyl chloroform has a relatively low ODP (slightly higher than the highest HCFCs), but it is already so widely used that it contributes large quantities of chlorine to the stratosphere and should be examined for possible control. We are currently studying the costs and availability of non-chlorinated substitutes for methyl chloroform. This analysis will provide information on the feasibility and costs of reducing the production and use of this chemical.

2. (Q) On page nine of your testimony, you say we "fundamentally disagree with including in any legislation the potential regulation of HCFCs." That is a pretty strong statement. As Doctor Watson noted, if we allow the market for HCFCs to grow without controls on overall ODP, we will find ourselves right back where we started with CFCs--arguing for next fifteen years about the need for controls. Your own charts show the difference between a 50 percent and a 20 percent substitution rate. How do you suggest we prevent a 50 percent rate.

(A) We believe that limits on the production or use of HCFCs would be premature and will not likely be necessary. We intend to monitor the substitution rate of HCFCs and the uses for which they are being substituted; if chemicals other than HCFCs can be used safety and effectively EPA would recommend that alternative. In addition, EPA is working closely with chemical manufacturers and users to identify alternative chemicals as well as processes. Moreover, effective conservation, recovery, and recycling procedures, many of which are currently known to industry, can reduce chemical use significantly, thereby further controlling the HCFC substitution rate. Based on our current analysis, we believe these alternatives should result in substitution at a rate substantially less than 50% and therefore would be preferable to creating a cap on overall ODP.

3. (Q) On page 12 you mention a concern about legislative activities that would establish a new federal bureaucracy or oversight effort. Do you have a specific proposal in mind? If so, which one?

(A) The Agency is concerned that creating a new federal layer to oversee all projects related to both stratospheric ozone protection and the greenhouse effect, would be cumbersome and would slow down the rapid pace at which government and industry is now working. Such proposals are mentioned for example in Senator McCain's bill (S. 644).

The Campaign
for Safe
Alternatives to
Protect the
Ozone Layer

A National Grassroots
Environmental Alliance

TESTIMONY OF

Bill Walsh

U.S. Public Interest Research Group

Presented On Behalf Of:

The Campaign For Safe Alternatives

to Protect the Ozone Layer

BEFORE THE SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION

Concerning Legislation To

Regulate and Control Ozone Depleting Substances

MAY 19, 1989

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INTRODUCTION

My name is Bill Walsh, staff attorney with the U.S. Public Interest Research Group. I am here today on behalf of the Campaign For Safe Alternatives to Protect the Ozone Layer, a growing national alliance of hundreds of grassroots activist groups concerned about the consequences of ozone depletion. We are concerned on two levels. First, we are frightend by the forseeable consequences of further delay in confronting this crisis. Second, we want to ensure that this 11th hour attempt to save the ozone does not have the effect of increasing other risks of concern to human health and the environment.

The destruction of the statospheric ozone layer has already reached potentially catastrophic proportions, according to the latest evidence from EPA. Neither the Montreal Protocol, nor the Bush Administration's endorsement of a year 2000 phase-out of certain chemicals holds promise for repairing the ozone layer. The EPA evidence demonstrates that we must do much more than is now planned. Carbon tetrachloride and methyl chloroform must be phased out as rapidly as CFCs and halons, and all ozone depleting chemicals must eventually be banned, including those that have been identified as interim substitutes for CFCs.

This raises our second concern, that we are not taking adequate steps to ensure that the substitutes for banned chemicals will not harm human health and the environment in other ways.

We appreciate the opportunity to present our views to Congress today and urge that the United States act upon the evidence, unilaterally if necessary, and begin a rapid, comprehensive and safe replacement of ozone depleting chemicals.

We believe a four part program is needed:

1. Accelerate The Phase-Out Of All Ozone Destroying Chemicals.

2. Enact A Safe Alternatives Policy To Ensure That Banned Chemicals Are Not Replaced With Chemicals Or Other Technologies That Harm Human Health Or The Environment In Other Ways.

3. Raise Revenue To Fund Accelerated Research And Development Of Safe Alternatives And Provide Assistance To Workers Displaced Due To The Chemical Phase-Out.

4. Prohibit All Preventable Releases of Ozone Depleting Substances.

I.ACCELERATE AND BROADEN THE PHASE-OUT PROGRAM.

The Montreal Protocol represents the lowest common denominator of stratospheric ozone protection acceptable to nations having vastly diverse resources and needs. In environmental terms, it is obsolete. It would allow stratospheric chlorine levels from human emissions in the next 50 years to increase to a level three times higher than the level that coincided with the appearance of the Antarctic ozone hole.

The U.S. Environmental Protection Agency recently (April, 1989) released the results of computer analyses that show why only a rapid and all-inclusive phase-out of ozone depleting chemicals can prevent large increases in the levels of destructive chlorine in the stratosphere. According to the EPA data restoration of the ozone layer requires not only a CFC phase-out, but also phase-outs of carbon tetrachloride and methyl chloroform coupled with stringent controls to insure that the ozone depleting potential of CFC substitutes is minimal. We have submitted along with our written testimony our recent report, As The World Burns: Documenting America's Failure To Address The Ozone Crisis, which discusses the implications of these EPA data in a more comprehensive manner.

In order for the ozone layer to heal, chemical emissions of ozone destroying chlorine and bromine must be reduced to amounts less than naturally occurring levels. To meet this objective, the United States should undertake an aggressive program that is not dictated by industry timetables, but rather responds to environmental need based upon the latest scientific evidence of stratospheric ozone conditions. Nature will be a harsh judge of the adequacy of our actions. Experts cannot rule out the possibility that the timetable we recommend today will not be rendered obsolete by the next batch of data from the stratosphere. The United States should, therefore act immediately to:

A. Prohibit production and importation of CFCs and Halons in excess of 50% of 1986 levels by 1991.

B. Eliminate production (100% phase-out) of these chemicals, including, carbon tetrachloride by 1995.

C. Eliminate production (100% phaseout) of methyl chloroform by 1995. Where chemical users demonstrate that despite intensive, legitimate research efforts, no safe alternative to a particular use of methyl chloroform is available in 1995, extend the phase-out deadline five years for that use.

D. Limit production of ozone depleting substances used as interim substitutes for the worst ozone depleting compounds, e.g. HCFCs, and develop an environmentally sound timetable for phasing them out.

E. Establish criteria for identifying all other ozone depleting chemicals and develop timetables for the swiftest possible phase-out of those substances, providing for safe alternatives.

These measures should be undertaken unilaterally, before renegotiation of the Montreal Protocol concludes this summer. Common sense dictates that such action would strengthen, not weaken our influence in the international forum. The United States, as the world's largest user and producer of ozone destroying chemicals, should be prepared to lead the world's ozone preservation effort by example.

We believe the best legislative approach among the bills under consideration today is that which offers 1) the most rapid possible timeline for phase-out of currently regulated substances plus carbon tetrachloride and methyl chloroform, and 2) a slightly longer timeline that governs the phase-out of any substance contributing to stratospheric ozone destruction - including interim substitutes for currently regulated chemicals. We do not believe limiting use in newly manufactured products at an early date justifies a longer production phase-out time frame as proposed in S.676. Among the bills under consideration today, S. 872 proposes the most rapid and comprehensive phase-out.

II. ENACT A "SAFE ALTERNATIVES POLICY"

It is essential that we conduct the phase-out of these chemicals responsibly - in a manner that protects the ozone layer without creating new threats to public health and the environment. An illustration of the choices we face is the need to replace CFC-113, a widely used solvent with low toxicity. Although aqueous cleaning has proven to be a safe, reliable alternative to some uses of CFC-113, there are also readily available chemical substitutes such as perchloroethylene and trichloroethylene, both highly toxic and probably human carcinogens.

In a candid Advanced Notice of Proposed Rulemaking published April 17, 1989, the Environmental Protection Agency warned solvent users that "in stopping the use of CFC-113, the Agency does not want producers and users to replace it with solvents which are also considered ozone depleters or probably human carcinogens. The chlorinated solvents under regulatory scrutiny by EPA include methyl chloroform, methyline chloride, perchloroethylene, trichloroethylene and carbon tetrachloride." [54 Fed. Reg. 15229]. However, the Agency did not prohibit the use of these solvents as substitutes, nor did it identify "safer" alternatives. It is evident that the existing regulatory system does not ensure a transformation to safe alternatives.

Compound problems such as this demand a new, proactive approach - a Safe Alternatives Program - designed specifically to prevent the coming transition from shifting risks from the stratosphere to our workplaces and communities on a huge scale. In order to insure that the safest, most energy efficient alternatives to ozone depleting chemicals are widely used, Congress must provide the direction and the resources that will identify safe alternatives and to ensure that they are used.

Defining Safe Alternatives

Many chemical substitutes, engineering controls, and process modifications have already been identified to eliminate the uses of most CFCs and many other ozone depleting chemicals. Many will merely shift rather than reduce health and environmental risks. Congress must clearly define the criteria by which the "safety" of proposed alternatives will be evaluated. This definition should encompass all health and environmental effects of the potential substitute, including: its effects on stratospheric ozone, its contribution to air pollution and the greenhouse effect, and other health and environmental effects. We recommend that "safe" be defined as follows:

> **The safety of an alternative to the use of ozone depleting chemicals shall be evaluated by assessing the extent to which it reduces overall risks to the health of workers, consumers and the environment without creating substantial new risks of concern to workers, consumers or parts of the environment.**

By defining safe alternatives in this manner, a national Safe Alternatives Policy would establish a comprehensive preventive approach that would produce many desirable outcomes including:

- o preventing increases in the amount of hazardous waste that pollutes the environment, damages natural ecosystems and contaminates food chains;
- o preventing increased routine and accidental occupational exposures to toxic materials;
- o preventing increased human exposure to toxics in commercial goods and consumer products;
- o preventing increases in the incidences of accidents and spills experienced in transporting and storing toxic materials.

This definition would also help avoid the situation that followed the the ban on CFCs used as aerosol propellants in the United States. Although manually operated pump mechanisms or a solid formulation of the product were available alternatives for most aerosols affected by the CFC ban, manufacturers generally substituted hydrocarbons such as butane or propane for the CFCs. As a result, hydrocarbon emmissions from household aerosol use in the Los Angeles basin alone has reached 96 tons annually, almost 1/12 of all area hydrocarbon emmissions. These chemicals now are proposed for phaseout in that use under the Los Angeles anti-smog plan because they contribute to the creation of ozone smog. Under our recommended definition, such environmental side-effects of proposed CFC substitutes would define hand held pumps or product reformulation as a safer alternative.

The point is we need to use less, not more toxic substances. In this 11th hour effort to revive the stratosphere, it is useful to recall the ominous testimony delivered by the Office of Technology Assessment one week ago in this room: American industry is wontonly dumping an estimated 200 million tons per year of highly toxic chemicals into the air, land and water, and generating another 500 million tons of RCRA defined hazardous wastes. Most, if not all Americans carry synthetic chemicals in their body tissue. [Source:Office of Toxic Substances, U.S. EPA, Dec. 1986.] Nineteen per cent of all drinking water systems tested nationwide have shown some level of toxic chemical contamination. [Source: Center For The Study Of Responsive Law, Jan. 1988].

We are slowly becoming sensitive to the global impacts of industrial and commercial activity, e.g. energy generation or automobile design. We must be equally attentive to the potential for shortsighted global protection efforts that compound the problems in our own back yard.

Identifying Safe Alternatives

Identifying truly safe alternatives to ozone depleting chemicals demands that the search not be confined to "substitute" or "drop-in" chemicals. We strongly oppose excessive reliance upon the large users and producers to develop alternatives to ozone depleting chemicals. They have an inherent conflict of interest. For example, CFC producers such as DuPont and Allied Signal enjoy a virtual monopoly in the refrigerant market. Their search for chemical substitutes for CFCs is not likely to include other viable alternatives, such as ammonia adsorption or helium systems, that would jeopardize their huge market in refrigerant chemicals. Similarly, refrigerator manufacturers who have benefited from the standardized design of cooling systems for over 40 years have little incentive to promote wholly new system designs, even if they could be safer than modifications to standard designs.

Thus far the major chemical producers and users of ozone destroying substances have failed to admit the potential of legitimate alternatives that offer substantially greater opportunities for preventive environmental protection than chemical substitutes. For example, major refrigeration system manufacturers appear to be marching in lock step with CFC producers to find near "drop-in" substitutes for CFCs. The leading candidates,HCFC-22 (an ozone depleter) and HFC-134a (a potential greenhouse gas), may be suitable for interim use only. Yet, there is little indication that either the major CFC users or producers have begun to seriously research ozone benign systems.

There are safe, non-toxic alternatives to ozone depleting chemicals that should become widely used instead of chemical substitutes or technologies that will increase the toxic stress on the environment - for example:

o aqueous cleaning has proven to be a reliable alternative to many chlorinated solvents used in cleaning operations.

o fiber glass insulation can substitute for polyurethane foam and profvide equal building insulation capacity for about the same cost.

o carbon dioxide is an effective CFC substitute in aerosols and sterilant mixes.

It is possible to maximize the availability and use of truly safe alternatives, by establishing evaluation criteria for potential alternatives that achieve fundamental pollution prevention, i.e. reduced toxics use, rather than shift risks from the stratosphere to our communities.

The concept of preventing pollution through toxics use reduction is familiar to government regulators at the state and federal level, as well as all of the major users and producers of ozone destroying chemicals. We are fortunate that the urgent need to undertake this complex industrial transformation coincides with this new national focus on comprehensive pollution prevention. Congress has both the opportunity and the obligation to ensure the long term success of the nation's top pollution prevention priority. This can only be accomplished with clear direction to ensure a transformation to safe alternatives.

Ensuring Wide Development And Use Of Safe Alternatives

WE WISH TO EMPHASIZE THAT RESEARCH AND DEVELOPMENT OF SAFE ALTERNATIVES SHOULD NOT DELAY THE RAPID PHASE-OUT OF OZONE DEPLETING CHEMICALS. For that very reason we believe the Congress must confront this issue head-on. One can anticipate that under existing crisis conditions, some replacements that are not suitable for long term use will be required for an interim period. However, we are gravely concerned that over the long term, the unregulated replacement of CFCs and other chemicals will increase the presence of harmful substances in our workplaces, communities and consumer products.

To ensure that safe alternatives are widely used, Congress must require that they be used. We propose a three part plan for ensuring the widest possible usage of safe alternatives.

First, subject all ozone depleting chemicals to eventual phase out - even if they are currently the only ready alternative to more destructive substances. Our proposed phase out schedule (see Sec.I above) will provide incentives for long term research and innovation.

Second, ensure that government supported research programs are clearly governed by fundamental pollution prevention principles, such as toxics use reduction.

Third, prohibit chemical substitutes or technologies that do not meet fundamental preventive criteria for uses where a safe alternative is available.

We believe the Safe Alternatives policy embodied in S.872 is an essential component of any national program to control and regulate ozone destroying substances. We believe this proposal will effectively identify safe alternatives if EPA applies the fundamental safe alternatives pricnciple discussed above. We urge however, that such a policy be augmented by a specific requirement that toxic or hazardous chemical substitutes be prohibited for uses where EPA has identified safe alternatives.

III. Fund Independent Research And Development of Safe Alternatives With Revenues Obtained From Chemical Producers

We support legislation that will obtain additional revenues from the chemical producers that stand to profit from this crisis. For over a decade, these industrial giants have snuffed out efforts to gradually move society away from the destructive use of their products. Instead they have fostered the growth of the CFC market. There is no legitimate excuse for allowing industrial giants such as Dupont and Allied Signal to reap windfall profits from the crisis exacerbated by their deliberate actions. In fact, we believe they should be sanctioned for their reckless disregard for the national interest.

We do not believe and are not concerned that a charge levied on chemical production might reduce private investment in the research and development of alternatives. To the contrary, we believe that the federal government should promote intensive independent research efforts that compete with the chemical fixes that can be expected from the industry. Congress has the opportunity and the obligation to state definitively that preventing pollution means finding safe alternatives that do not merely shift risks. We urge a two pronged program that combines a federally supported research effort with procurement commitments to support competitive efforts to market truly safe alternatives.

First, all of the revenue generated from CFC producers should be used to establish a national Safe Alternatives Research Institute dedicated to developing truly safe alternatives to the use of ozone depleting chemicals. Second, the federal government should use its procurement authority to provide entry markets for proven safe alternatives that meet fundamental pollution prevention principles.

We also wish to note that an accelerated and more comprehensive phase-out of these chemicals could have significant impacts on employment at certain facilities. We urge Congress to consider setting aside a reserve fund to provide special financial assistance to workers whose lives are disrupted by the phase-out.

A National Research Project

The nation is currently ill equipped to successfully manage the transition from ozone depleting chemicals to truly safe alternatives that do not create other substantial health or environmental risks. We need an energetic new approach to signal that a new era in environmental protection has begun. A national Safe Alternative Research Institute should be established to attract the world's best scientists and engineers in a concerted effort - in the nature of the Manhattan Project - to find permanent, safe alternatives to the use of ozone depleting chemicals. Federal rather than private sector funding would guarantee these experts the independence to evaluate the whole spectrum of alternative possibilities. The safe alternatives policy described in Sec.II above would establish the goal and the criteria by which to measure progress. Such an effort could reasonably be expected to produce fundamental approaches to pollution prevention that would be widely applicable across a spectrum of environmental protection concerns.

This effort would have additional desirable effects. First, a high profile commitment to finding truly safe alternatives would motivate more private sector research into alternatives that meet the safe alternatives criteria. Second, such an effort would encourage chemical producers and large users to invest more of their own substantial resources into safe alternatives. This is a just result in light of their historic obstruction of ozone protection efforts.

Congress should resist Administration efforts to retain all or some of the anticipated revenues from chemical production for deficit reduction purposes. In the face of an increasingly complex web of trans-national environmental problems and an anachronistic EPA budget, it does not make sense to deny serious resources to an effort that holds the promise of widely applicable, long term solutions.

National Markets For Safe Alternatives

In addition to a federally funded research effort, the United States should use its substantial purchasing power to establish a national market for alternatives that meet fundamental pollution prevention criteria. Federal procurement guidelines that give preference to goods that meet safe alternatives criteria would reduce the risk of investing in new technologies and provide enterprenuers with a better opportunity to compete with large corporations. Block purchasing programs are also a good idea for nurturing the development of safe alternatives.

We believe S.503 is consistent with these ideas. We also note that S.871 which has been referred to the Committee on Finance meets many of the same objectives. With regard to both bills, however, we urge that expenditures from the proposed trust fund meet the fundamental pollution prevention criteria of the safe alternatives policy we have described. Furthermore, we believe all monies generated pursuant to such legislation should be dedicated to finding permanent, safe alternatives.

IV. Prohibiting Preventable Releases

Because large quantities of ozone depleting compounds are presently banked in millions of household appliances and consumer goods, effective phase-out legislation will not be possible without a comprehensive program that ensures recapture, recycling and regulated destruction of these substances. The technology exists to prevent most of these chemicals from entering the earth's atmosphere. However, it is not widely used and will likely remain underutilized absent a mandatory recovery program. This is particularly true in cases where the chemical will be difficult to reuse, such as the 80 million kgs. used in rigid foam. Therefore, we believe it is necessary to take the follwoing steps to stop preventable releases:

1. Ban sales of small quantities and nonessential products containing regulated chemicals. Clearly label products that contain or were manufactured using ozone depleting substances. This will allow consumers to make environmentally sound purchases and reduce the quantity of these chemicals in commerce.

2. Require, to the maximum extent possible, that goods containing ozone depleting chemicals be constructed so as to allow recapture of the substance without releasing it to the atmosphere. This will make it easier, and therefore more likely, that these

chemicals will not be released once they are in the stream of commerce.

3. Prohibit the release of ozone depleting substances during manufacture, servicing, repair and disposal of goods that contain such substances, and explicitly require that recapture equipment be used by service and repair personnel. This prohibition will encourage cooperation in the program to recover the hard-to-get chemicals, such as CFCs in rigid foam. The service and repair rule will prevent service agents from refusing consumers service that involves the regulated chemical.

4. Establish a national program to recapture the chemicals that are contained in consumer products at the time of disposal. Without a uniform system, it will be difficult to insure the efficient reclamation of ozone depleting chemicals from consumer goods at the time of disposal.

As with the case of the safe alternatives policy, this action has ramifications that extend beyond the immediate ozone crisis. The system we establish for recycling regulated chemicals from consumer goods should also promote efficiency in solid waste recycling. We believe the most efficient system would require distributors of such products to accept them for recycling and disposal.

Several of the bills under consideration today - S.333, S.491, S.676, and S.870 (referred to the Committee on Commerce, Science, and Transportation) - address these issues to varying degrees.

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AMERICAN ELECTRONICS ASSOCIATION

before the

Senate Environment and Public Works Committee
Environmental Protection Subcommittee

May 19, 1989

My name is Cheryl Russell. I am the Director of Environment and Occupational Health for the American Electronics Association. As I am sure you are aware, CFCs are a critical element in the manufacture of all types of electronics equipment, -- from chips, computers and circuit boards to fiberoptics, CRTs, guidance systems and mass spectrometers.

The American electronics industry recognizes the importance of protecting the ozone layer. The industry also believes additional measures beyond the current Montreal Protocol - such as expanding the list of chemicals covered and increasing the reduction of the production of these chemicals - should be taken.

Reducing the use of CFCs in the electronics industry is AEA's top environmental priority. The electronics industry has already devoted considerable resources to finding substitutes for CFCs, limiting their use, and reducing CFC emissions. We expect to devote still more resources to this problem in the coming years.

The Good News

We already have success stories. One company eliminated 20% of its use in a single assembly line through a training program. Another company completely eliminated the use of CFCs in one process step - eliminating the need to use nearly 8,000 gallons of CFCs per year.

Over the last two years, a third AEA member company reduced its use by 50% at one of its major facilities. Most of the remaining 50% has not been reduced because CFCs are required by the military specifications.

CFC use was cut by approximately 50% in just the last year by still another member company in a single process - one that represents the company's single largest use. This change will in turn be incorporated in the company's processes corporation-wide. Within the next 2 years the company expects to achieve a total of 80% reduction in its two largest uses.

That is the good news. Success stories will be common in the electronics industry in the next 2-4 years. But this will change. Reductions will diminish as the industry tries to eliminate critical uses where materials compatibility and ultrapure precision cleaning are needed.

Beyond the technical difficulties -- and there are many -- companies will have to address problems with the various military specifications that apply to many electronics products.

Companies' ability to put substitutes in place will be hampered as they try to grapple with 10- and 15-year contracts requiring both CFCs and/or TCA to produce electronics devices, gyroscopes or shuttle parts for DOD and NASA.

Nevertheless, we have made and expect to make more reductions from housekeeping measures, process changes, installation of new equipment and other measures that could result in significant reductions in the next two to four years.

Orphan Applications

The industry is less concerned about the ability to make large reductions in the next five years than it is about the ability to completely eliminate the use of CFCs. Because electronics uses of CFCs include between 100-200 different applications, there may be cases where there simply is no substitute.

Even the producers have acknowledged that the specialized nature of some electronics uses makes it diffcult to envision what substitutes could be developed.

CFCs became the solvent of choice for the electronics industry for a number of reasons, including the fact that it was considered safer in the workplace than many of the traditional solvents. Gradually the industry came to rely on CFC-113 as the chemical of choice for many operations and built whole new technologies around its unique properties.

CFCs were believed to be environmentally benign, neither contributing to air pollution nor to any hazardous waste problems. No health or safety problems have been attributed to CFCs. They are not flammable or combustible.

They are an effective cleaner and gentle cleaner that leaves no residue. They have a wide range of materials compatibility. This allows CFCs to be used in a variety of applications and to be combined with other compounds to perform functions that neither compound alone is capable of performing. They have a low vapor pressure, allowing them to penetrate into small spaces for cleaning.

As chemical users, rather than producers, electronics companies are in a tight spot. Industries that use significant quantities of CFCs create a sufficient incentive for the development of substitutes. This argument however, does not apply to the electronics industry. Electronics uses represent only 12% of the CFC market. Between the diversity of electronics applications and the small market represented by electronics use, AEA is concerned that substitutes may not be developed for all applications.

Given the disincentives to invest heavily in substitutes for such small uses, CFCs for specialized electronics uses may become the newest orphans. The industry may be left with no source of supply for these essential compounds.

Substitutes must be developed for all uses.

Solving the Problem

The Montreal Protocol represents a good first step in solving the ozone depletion problem by requiring a 50% phaseout by 1998. The protocol's reductions, however, do not go far enough and they do not address all of the compounds with ozone depletion potentials greater than 1.0.

Obviously this needs to be remedied by strengthening the Montreal Protocol.

First, AEA supports revision of the Montreal Protocol to accelerate the phaseout schedule. AEA supports a 100% phaseout of the CFCs and halons currently listed in the Protocol by the end of the century with the understanding that safe substitutes will be available.

In addition to accelerating the phaseout schedule, AEA believes that the list of substances covered by the protocol should be expanded.

The Protocol's failure to include carbon tetrachloride on the list of controlled chemicals, is unacceptable. Carbon tet has an ozone depletion potential of 1.06, which is higher than five other chemicals already covered by the protocol.

We recommend that a phaseout schedule be adopted for carbon tetrachloride that is at least as aggressive as that applied to CFC-11, CFC-12 and CFC-113.

The carbon tetrachloride problem highlights the need for global action. Even though substantial amounts of carbon tetrachloride are used abroad, very little is still used in the United States.

Another chemical that must be addressed -- despite its low ozone depletion potential -- is TCA. Reductions in TCA present a significant problem for the electronics industry. Many of the problems we face in replacing CFC-113, the diversity of applications and the military specifications, apply equally to TCA. As users of both CFC-113 and TCA in a large number of diverse applications, the electronics industry will be hit doubly hard in finding substitutes for these two chemicals.

From an engineering standpoint TCA is an excellent substitute for CFC-113 in a number of applications. Without an international agreement that places some limits on TCA growth there is little reason to believe that electronics companies in other nations will not simply replace CFC-113 with TCA. AEA does not advocate TCA as a substitute for 113.

If an international agreement can be reached on TCA, AEA believes that a freeze may be appropriate, as long as it does not interfere with the actual phaseout of CFC-113.

Attempts to take more aggressive action on TCA could seriously undermine efforts to speedily reduce the use of CFC-113. The differential between the ozone depletion potentials - 0.8 v. 0.1 - for CFC-113 and TCA combined with the difficulty in finding TCA substitutes that do not generate VOCs are strong arguments to focus first on CFC-113 and then on TCA.

The problems with adjusting military specifications also apply to TCA, especially in the aeronautics industry.

Global Problems Need Global Solutions

AEA unequivocally endorses international action to reduce CFC emissions through the Montreal Protocol. As stated above, AEA also endorses significant improvements to that protocol.

Trying to reduce CFC emissions in the U.S. on a unilateral basis will have a negligible effect on ozone depletion.

U.S. electronics companies compete in a global marketplace. Competition is fierce and differences in product availability and cost can have a significant impact on the U.S. industry. The relative availability of CFCs, for example, can affect both product quality and cost -- two primary factors that affect market share. If CFCs are not available to U.S. companies at the same time that foreign competitors have access to them, American companies could be seriously disadvantaged.

Only an international solution can effectively address ozone depletion. Unilateral domestic initiatives will upset the dynamics of the competitive marketplace without significantly affecting the worldwide usage of CFCs. Manufacture will shift to less tightly restricted foreign manufacturers and the impact on ozone depletion will be minimal at best. This result is environmentally and economically unsound. A global problem needs a global solution.

Fee, Auctions and Costs

The electronics industry is repeatedly asked about the potential impact of the higher cost of CFC substitutes and the implications of imposing fees and/or auctions to regulate CFC use. AEA is certainly not blind to the issue of cost. But the cost of a substitute product typically will represent only a small part of the cost borne by electronics companies when switching to CFC substitutes.

Electronics substitutes are likely to require individualized research, product redesign, process adjustments, new equipment and replacement of other process chemicals to ensure compatibility with substitutes. The cost of these efforts will eclipse the cost of the substitute products.

Furthermore, it is fruitless to worry about the costs of substitutes that do not exist or may never exist. Our primary concern is whether we will have substitutes - not how much they will cost.

The question for the electronics industry is simple. What is the best way to get substitutes? Does the industry rely on the chemical producers or does it gamble on the imposition of a regulatory fee - to which the producers are opposed - to finance research into substitutes? Clearly, higher costs will not motivate producers to conduct research - which we badly need - but could hinder research and development by reducing the pool of available research dollars.

At best, fees and a fund are a gamble. Despite measures in the Baucus bill to limit the impact of fees on CFC costs, AEA believes fees will inevitably increase costs for users. Even with the increased costs, there is no guarantee that the research dollars would be effectively spent on substitutes for electronics applications.

In fact, there is no guarantee that a fee, once endorsed, will be devoted to CFC substitute research. As you know there are other proposals that simply want to use the fee to supplement the U.S. Treasury.

The value of a fee-driven research fund for the electronics industry is limited unless the program has full federal support and is not undermined by state and local restrictions on CFCs that may have the practical effect of preempting the federal program.

The threat posed by uncoordinated local restrictions on CFC use is real. Because of the distribution of our members, approximately 60% of AEA's members would be barred from any use of CFCs by July 1991 or sooner by bills introduced in just three states. One of these bills, which would affect approximately 51% of AEA's members, is not only pending but likely to pass the California legislature.

Uncoordinated local and state attempts to address the global problem of stratospheric ozone depletion will create havoc with U.S. companies' efforts to respond to this problem without making any significant contribution to solving the ozone depletion problem. AEA strongly urges that any federal legislation include a preemption provision, in order to prevent "reverse preemption" of the federal effort by states and localities.

AEA does, however, have an opinion on auctions. We oppose this concept. It is not possible to construct an auction without disadvantaging small companies. Better than 80% of AEA's 3500 members are small businesses with fewer than 250 employees.

Furthermore, there appears to be some question about EPA's authority to institute such an auction. A court challenge of such a program would hinder the development of substitutes and disadvantage all users.

Bans and Import Restrictions

AEA is pleased that Senator Chafee recognizes the potential impact of unilateral U.S. action on CFCs on American businesses by including a provision on import restrictions.

However, Section 12. of S. 491, Certification of Equivalent Programs, may represent the electronics' industry's single greatest objection to the proposed legislation.

The electronics industry is thoroughly integrated in the global marketplace. The exchange of imports and exports in the electronics industry is tremendous. At different stages of the manufacturing and assembly process, components of electronics products may cross international borders several times.

We made an effort to devise a alternate provision that would serve the purpose of Section 12, but without success. The option of substituting the term "finished product" for "product" fails to adequately address the problem. For example, for a chip manufacturer, a chip is a final product. What would be the interpretation of whether an item such as a gyroscope, which serves no purpose by itself, is a final product?

The second problem with Section 12 is that manufacturers will be dependent on EPA to make a determination that other countries' programs are equivalent to the U.S. Considering the delays created by the number of potential programs EPA would be required to assess, the impact on electronics companies' ability to conduct business will be substantial.

The third problem is lack of enforceability. There is no way of testing a product to determine whether it was made with CFCs or not.

The only way to resolve this serious flaw is to reserve CFC action for the international arena.

Recycling and Emissions Control

AEA supports these measures as long as they do not interfere with the substitution process. Companies should not be forced to make extensive investments in recycling measures in operations in which they plan to eliminate the use of ozone-depleting compounds.

Furthermore, recycled material has limited value for some electronics applications. In the long term, the applications where it will be most difficult to find replacements are also those applications which will be least amenable to the use of recycled CFC material, e.g. plasma etching.

This, of course, brings the debate back to the military specifications that require the use of "virgin" CFC material.

However, in processes where CFCs will continue to be used we do strongly support recycling measures. In order to expedite this recycling, however, we believe some changes may be needed to the RCRA regulations.

Safety First

AEA is concerned that none of the bills before the committee give any consideration to other problems that might be generated by requiring the substitution of other compounds for CFCs.

In the electronics industry the use of CFC-113 was encouraged and applauded by state and local governments alike as a better alternative to many of the solvents traditionally used by the industry. The use of CFCs has resulted in significant improvements in VOC emissions and in worker safety and health.

We should not turn our backs on those improvements without considering the consequences. This is not to suggest that progress should be slowed on CFC replacement - simply that some provision should be made to ensure the availability the information necessary to make informed choices.

The electronics industry is regarded as one of the safest manufacturing industry. It is also the largest employer in any manufacturing sector in the U.S., employing over 2.5 million people nationwide. Without adequate information about substitutes it may difficult to maintain this standing.

This difficulty is heightened by the large concentration of small companies in the electronics industry. More than 80% of AEA members are small companies that do not have the resources to thoroughly research substitutes offered to them.

AEA received some promotional literature for a potential CFC alternative that had been provided to one of AEA's larger member companies. The brochure would lead one to believe that the compound was an alternative of choice -- listing such claims as "environmentally safe" and "biodegradable."

This same literature neglected to mention that the compound would be combustible when vaporized, that it is a precusor which would contribute to nonattainment problems, and it contains a compound which is on the California Prop 65 list. The last two points are notable since the compound was offered for sale in California, where better than 50% of AEA's members are located.

A large electronics company recognized the serious problems associated with this so-called CFC substitute; a small company would not necessarily be able to make the same informed judgment.

It is AEA's position that any bill which forces a rapid phasedown of CFCs and other ozone-depleting compounds should include some mechanism to ensure a careful review of safety, toxicity and environmental impacts.

Futhermore, electronics companies should not have to accept substitutes blindly without knowledge about the substitute's ozone depletion potential.

You will note that a list of compounds has been attached to the testimony. All of the compounds include TCA in some concentration. This list represents TCA compounds used at a single facility over a three year period. It is impossible for the chemical user to distinguish between these compounds and their relative merits as far as ozone depletion potential is concerned. AEA believes that the ozone depletion potential should be a new requirement for the material safety data sheet.

Military Specifications Dilemma

No discussion of CFC substitutes for the electronics industry would be complete without citing the hurdles electronics companies face in reducing the use of CFCs in products made for the military and NASA.

AEA member companies have been working with EPA and DOD to complete feasibility tests for substitutes in order to revise the military specifications. But feasibility tests are only the first step. Reliability testing, revision of the military specifications, manufacturing process changes and finally reverification of the products must follow.

This creates a timing problem that makes it difficult for electronics companies to predict when the total elimination of ozone-depleting chemicals will be possible.

There is a common misconception that the military specification problem revolves around the cleaning of printed circuit boards. This is unquestionably an important problem that must be solved, but it is a mischaracterization of the military specifications problem as a whole.

The industry is once again confronted with a long list of applications where substitution will be necessary. In each instance not only will the industry have to solve a technical problem but also a bureaucratic one.

NASA shuttle parts, gyroscopes, guided missile systems and a host of other military products are required to be manufactured with CFCs or TCA. In fact any sophisticated measurement or tracking equipment - an oscillloscope or a radar - that requires a screen or a CRT is made with CFCs.

Many of these products are manufactured under long-term contracts, ten or fifteen years in length.

If we hope to eliminate the use of ozone-depleting compounds from what are in many cases are small, esoteric uses, we must have an accounting as soon as possible about how many different military specifications require the use of ozone-depleting compounds.

Once such a list is completed AEA believes the military and NASA should share some responsibility for a research program to to address these applications.

Furthermore, DOD and NASA should be asked to institute a plan now for handling the revision of contracts as substitutes are developed and to expedite the wholesale reverification of products AEA believes will be necessary.

Common Interest

The electronics industry would like to be the first industry to eliminate the use of ozone-depleting compounds from its manufacturing processes. Unfortunately, we recognize that this is an ambitious goal that we are unlikely to meet.

The electronics industry is concerned about many aspects of this problem. But we share a common problem and a common goal - protection of the ozone layer. And we are committed to solving this problem.

If you decide to take further action, we hope you will help us make good choices by ensuring that we have adequate information about substitutes to make informed decisions. We also hope that you will help us speed resolution of the military specification dilemma.

Thank you for the opportunity to address this important problem. We will be happy to provide any information we can.

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Testimony of

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Natural Resources Defense Council

on

Pending Legislation to Control the Manufacture, Use, and Disposal of Ozone Depleting Substances

before the

Subcommittee on Environmental Protection
Committee on Environment and Public Works
U.S. Senate

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Thank you Mr. Chairman and members of the subcommittee. I am Daniel Lashof, senior environmental scientist for the Atmosphere Protection Initiative of the Natural Resources Defense Council. Previously, I worked in EPA's Office of Policy Analysis on the report entitled "Policy Options for Stabilizing Global Climate." My testimony was developed in collaboration with NRDC senior attorney David Doniger, who directs our Ozone Protection Project, and who represented us at the recent UNEP meetings in Helsinki. He could not be here because of a prior commitment and, with your permission, I am appearing today in his place.

Mr. Chairman, NRDC urges you to move forward rapidly with legislation to accomplish three objectives:

(1) Phase out chlorofluorocarbons (CFCs), halons, and related chemicals such as methyl chloroform and carbon tetrachloride on the fastest possible schedule. Alternative fluorocarbons -- the hydrochlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs) -- should also be covered by such legislation, although on different terms than the other chemicals, as I shall explain below.

(2) Establish a CFC and halon production fee, with proceeds devoted to the development and demonstration of chemicals and technologies that will protect the ozone layer and the global climate.

(3) Take immediate steps, through recycling measures and targeted restrictions, to control unnecessary emissions right away.

I will address these issues and the questions in your letter of invitation below.

I. The Scientific Situation and the Necessary Controls

You have asked what steps should be taken to strengthen international and domestic controls on ozone-depleting substances. You have also asked for comment on the control measures proposed in the various pending bills. I would like to answer all these questions together, since NRDC believes the same control measures need to be pursued on both fronts, international and domestic, simultaneously.

It is now past doubt that the ozone layer and the climate are being gravely damaged by CFCs and related gases. These substances are causing the Antarctic ozone "hole" and contaminating the Arctic stratosphere in similar fashion. They are the probable cause of ozone losses taking place on a global scale at two to three times the rate predicted by earlier models. In addition, they are powerful global warming gases, accounting for almost one fifth of the current increase in the greenhouse effect.

Scientific analysis over the past year has focused on what must be done to cleanse ozone-depleting chlorine and bromine compounds from the stratosphere. The bad news is that according to the EPA analysis presented in Helsinki and to you today, if the only thing done is to phase out CFCs and halons in the year 2000, things will get steadily worse. Chlorine concentrations in the year 2100 will be almost four times higher than they are now.

It is essential to control other ozone-depleting gases as well. The principal other chemicals of concern to the ozone layer are methyl chloroform, carbon tetrachloride, and -- as they grow -- the HCFC substitutes. All these compounds, plus the HFCs, are also greenhouse gases.

A. Control Measures Analyzed by EPA

According to the most favorable scenario analyzed by EPA -- a phase-out of the currently regulated CFCs, methyl chloroform, and carbon tetrachloride by 2000, and a limited growth rate and low average ozone depletion potential for HCFC substitutes --

- The buildup of chlorine can be stopped by about 2010,
- Chlorine concentrations can be brought back down to 1985 levels by about 2070, and
- We can hope for the Antarctic ozone hole to close sometime in the 22nd century.

It is all too easy to be abstract about matters on this time scale. This is a very long time. We are talking about 80 years -- after all of us are gone -- just to get back to the contamination levels prevalent today. We are talking about more than a century -- the next five generations of our descendants -- before the ozone layer is healed. And that is under assumptions that EPA considers "optimistic."[1]

So it is essential to look for additional measures that can hasten this recovery scenario. We think there are ways to do better.

B. Additional Necessary Control Measures

(1) Advance the Phase Out to 1995. NRDC advocates a 1995 deadline for phasing out the currently regulated CFCs and halons, plus methyl chloroform and carbon tetrachloride. We advocate

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[1] EPA considers its analysis "optimistic" because, among other things, it did not consider bromine from halons.

this deadline both for amendment of the Montreal Protocol and for domestic action here in the U.S.

The EPA analysis you have been presented does not directly examine the impact of a 1995 phase-out deadline. The effect of this deadline can be extrapolated from the EPA analysis, however. Based on this extrapolation, NRDC concludes that a phase-out in 1995, rather than 2000, could accelerate the recovery of the stratosphere back to current levels of chlorine by almost 20 years.[2]

If protecting the ozone layer were not enough of a reason to phase-out CFCs by 1995 there are compelling reasons to do so to reduce the threat of global warming. NRDC's preliminary analysis suggests that a global CFC phase-out by 1995 rather than 2000 would reduce additional commitments to global warming over the next decade by approximately 5%. While this may not seem like a lot, it is probably the largest impact that can be made on global warming by any single measure during the next decade. For example, a 1995 phase-out would have more effect than doubling the efficiency of all transportation systems globally by 2000.[3]

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[2] Our analysis is as follows. The growth rate in the stratospheric concentration of chlorine compounds in EPA's lowest case is about 0.33 parts per billion (ppb) between 1995 and 2000. The rate at which the chlorine concentration declines after the phase-out will be about 0.018 ppb per year. Using these values, a CFC phase-out five years earlier would result in recovery of the stratosphere to 1985 chlorine levels 18 years earlier.

EPA's lowest case assumed that the average ozone depletion potential (ODP) of the HCFCs will be 0.02 (2% the ODP of CFC-12). If the average ODP is 0.05 (the value for HCFC-22), then the rate at which the chlorine concentration will decline after the phase-out will be only about 0.013 ppb per year, and a return to 1985 chlorine levels will not occur until 2100. In that case, a CFC phase-out by 1995 would advance the date of such recovery by about 25 years.

Is a 1995 phase-out feasible? NRDC believes it is, with a governmental and industrial response appropriate to the global environmental emergency. Three major industrial nations -- West Germany, Sweden, and Norway -- are already committed to a virtually complete phase-out (at least 95% reduction) of CFCs by 1995. Their economies are as sophisticated and complex as ours. They have just as much need for coolants, insulating materials, and solvents as we do. If they can do it, the U.S. can too.

We are confident that with the right regulatory incentives it is also feasible to eliminate new halon production by 1995. It is commonly accepted that halon losses to the atmosphere can be cut by 90% or more just by preventing leaks and accidental discharges and by reforming training and testing practices. Many of the halon systems currently in place could be replaced with alternative firefighting methods. The stockpiles of halons already in existence could then be redeployed to any uses for which substitute development may take longer.

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[3] This analysis assumes that a CFC phase-out in 1995 would reduce year 2000 CFC concentrations by 33 parts per trillion (ppt) for CFC-11 and 55 ppt for CFC-12. Other CFCs have not been included.

The impact of doubling transportation efficiency is estimated based on reducing year 2000 carbon dioxide concentration 0.9 parts per million by avoiding emissions from 180 exajoules of oil between 1990 and 2000. Base case transportation energy use is taken from the SCW case in EPA's Draft report "Policy Options for Stabilizing Global Climate".

We are not saying that producers and users in this country are idle. But in our opinion, they are not approaching this undertaking with sufficient urgency. As a comparison, consider the need for production of planes, tanks, and other armaments at the beginning of World War II. The country could not, and did not, accept normal business schedules for production of these products. The global environmental threat that we face calls equally for an emergency response.

Industry spokesmen readily admit that both producers and users are waiting for clearer signals about their alternatives. To a far greater extent, they could be designing new products, and optimize new processes, in parallel with the testing of new chemicals. Many are holding back on such projects, however, because they are averse to greater than normal business risks. But these are not normal times. We feel those business risks must be taken, because the health and environmental risks of not acting faster are so high.

(2) **Establish Appropriate Controls Now for Alternative Fluorocarbons**. In our view, the amended Protocol and domestic legislation should also cover the alternative fluorocarbons, the HCFCs and the HFCs, although on a different basis than the other controlled substances. These chemicals pose a special dilemma. On the one hand, although less potent than the CFCs, the HCFCs are still ozone-depleting compounds. Both HCFCs and HFCs also raise greenhouse concerns.

On the other hand, they can serve as "bridging" chemicals, allowing the earlier phase-out of the CFCs currently subject to the Protocol. In such uses, ozone depletion potential is reduced by 90-100 percent. Thus it is not appropriate either to phase out these chemicals on the same schedule as the CFCs or to leave them out of the amended Protocol and domestic controls.

NRDC believes they should be added to the list of controlled substances although on a different basis than the others. Sufficient short-term growth should be allowed to displace the CFCs, with the most critical period being in the next decade. But the Protocol and domestic legislation should specify long-term limitations on these new chemicals so as to minimize their contribution to ozone depletion and the greenhouse effect. Further, these chemicals should be limited to uses from which they will be recovered and recycled, and to uses which will deliver energy efficiency gains. It makes no sense at all to use these chemicals in one-shot, low-value applications like aerosols.

Now the $64,000 questions obviously are: What do we mean by "short-term" and "long-term"? and, How much growth should be allowed? I must say that at this moment we do not have definite answers. We have asked EPA to analyze the impact on chlorine concentrations of several alternative scenarios in which the HCFCs are capped or phased out, at various times in the early part of next century. We need to see how fast such limits would bring chlorine loadings down, and how much sooner the stratosphere would recuperate. All parties are also waiting for a major EPA study on the HCFCs, which is due out in several weeks.

We are sensitive, of course, to industry's argument that they must have time to recoup their investments, or else they will not make them. But that is not a good argument for leaving these chemicals altogether uncontrolled. It is obvious that neither producers nor users need, or have any right to expect, a permanent guarantee of the availability of these chemicals. In evaluating industry suggestions that as much as several decades of unconstrained growth might be needed, one should bear in mind that industry investment criteria generally require a rate of return high enough to recoup investments in less than a decade. This committee should seek more concrete information from industry, both producers and users, that would allow it to independently assess the time periods needed to recoup investments in CFC substitutes.

A further reason to place limits on these chemicals now is to keep the engine of innovation running. In 1986, DuPont candidly admitted that it had done no work on alternatives between 1980 and 1986 because there were no regulatory limits constraining the future supply of the conventional CFCs. In short, there was no incentive to do R&D on better answers.

We cannot afford to have this happen again. We need to have a continued R&D effort by producers and users to develop even better chemicals and processes. The HCFCs and HFCs are not permanent solutions. We need solutions that are totally benign to the ozone layer and the climate. This is especially so if there should be further dark turns in the science that call for even more urgent responses. The incentives to develop these solutions will be maintained only if there are appropriate limits on the future availability of the HCFCs and HFCs.

NRDC has begun a dialogue on this point with some sectors of industry. We want to continue and expand this dialogue in pursuit of the best answer.

II. The U.S. Needs a Stronger Policy in the Protocol Negotiations

Is the U.S. government advocating the necessary controls in the renewed Protocol negotiations? Sadly not. While the U.S. led very positively with its scientific analysis in Helsinki, its present policy position on the needed controls is sorely deficient.

Silent on the need to control other chemicals, the Bush Administration is not even clearly firmly behind a CFC and halon phase-out in 2000. In Helsinki, the U.S. negotiating team repeatedly objected to an unqualified deadline of 2000, in the so-called "Helsinki Declaration," for ending production of CFCs in industrial countries. Our negotiators so strongly emphasized the President's caveat about the need for safe substitutes that they created widespread doubt that the U.S. is serious about the 2000 deadline. My colleague David Doniger reports that four separate delegations approached him for an explanation of the U.S.'s resistance.

The American people had a right to be proud of the U.S.'s role in the 1986-87 Montreal negotiations. Even with the shortcomings of our government's position then, the U.S. was consistently the world leader in pursuit of a strong treaty.

This is no longer true. In Helsinki, the leading nations advocated a CFC phase-out before 2000. Many others spoke in favor of controlling methyl chloroform and carbon tetrachloride. A number also advocated controls on the HCFCs along the lines proposed above. While U.S. science still leads the way, and while the U.S. has one of the firmest halon policies, in all other respects our country's policy position is soft or silent. The U.S. must go into the subsequent negotiations firmly advocating the stronger control measures that we have set forth here.

III. The Need for Simultaneous International and Domestic Action

As you know, NRDC has long advocated acting internationally and domestically at the same time. We support the ongoing process for amending the Montreal Protocol. As noted, NRDC staff have participated as observers in all the phases of the negotiations. We drafted a detailed position statement on how the Protocol should be amended (copy attached), which has been signed by 94 environmental and nongovernmental organizations from all over the world, and which was presented to the negotiating parties in Helsinki. We want the amended Protocol, one year from now, to contain the control measures I have described above.

But we believe that at the same time it seeks a better international agreement, the U.S. has the responsibility to clean up its own house. That is why we have sued EPA to take further action under the Clean Air Act. That is why we support the enactment of the domestic phase-out legislation pending before you.

Our country produces and uses approximately 30 percent of all CFCs worldwide. It is the lamest of excuses to put off action at home on the grounds that we cannot completely solve the problem ourselves. There is no force left to the argument that unilateral action will discourage other nations from following. Many other nations major industrial nations -- e.g., Sweden, Norway, West Germany, Canada, the Netherlands, Australia -- are already committed, unilaterally, to phase-outs before 2000. They are waiting to see what the U.S. will do.

There is also no real danger that other countries will take economic advantage of us. All of the pending bills contain provisions to assure that our trading partners adopt similar phase-out programs in order to retain access to our markets. These provisions will effectively leverage their cooperation while protecting our industries against unfair competition.

That is why we support enactment of legislation to phase out CFCs, halons, methyl chloroform, and carbon tetrachloride by 1995, and to establish controls on the HCFCs and HFCs as described above. Although we think all of the pending bills head in the right direction, none of them precisely matches our control recommendations. We would be pleased to work with the committee on amendments to embody these recommendations.

IV. Legislation Should Include a Regulatory Fee and Trust Fund

NRDC strongly supports proposals to establish a fee on the production of CFCs and halons, to recoup for the public's benefit the unearned excess profits that are beginning to flow to the producers. The EPA regulations to implement the Montreal Protocol create a cartel among the producers. As supplies are cut by the rules, prices will rise. In 1988, EPA estimated that the producers' excess profits over the next 10 years may reach $2-7 billion. Already, we have heard widespread reports of sharp price increases even before the freeze becomes effective this July.

As we have argued to this committee before, there is no justification for allowing the CFC and halon producers -- the very firms most responsible for the damage already done to the ozone layer -- to reap windfall profits off the phase-out. The money should be recouped and rechannelled for the public good.

Consequently, we firmly support enactment of S. 503. We support its proposal for a base fee rate, plus an alternative calculation to assure recoupment of even higher price increases, should they occur. And we are strongly in favor of the proposal to set aside $100 million per year in a trust fund to support joint public and private sector projects to develop new products and processes that are benign to the ozone layer and helpful in the fight against global warming.[4]

Although we are happy to find ourselves in basic agreement with the Bush Administration on the need to recoup these funds, we do not support simply devoting all of the proceeds to deficit reduction. We believe most of the money should be placed in the service of protecting the ozone layer and the climate. NRDC also prefers a fee to an auction. The potential uncertainties surrounding an auction -- with the possibilities for speculation, hoarding, and price instability -- make it our second choice of the two proposed mechanisms.

The producers have made a number of incorrect and contradictory arguments against the fee proposal. Sometimes they claim there will be no price increases. But price increases are already occurring. At other times, they claim they need the excess profits to fund research on substitutes. But if the substitutes are commercially viable, they will draw support from ordinary sources of capital. If they are not commercially viable, then the producers are not likely to sink these profits into them.

Producers have also attempted to scare users and consumers with threats to "pass through" the fee as an added charge. This is bad economics. Prices will go up as high as the market will bear, and no farther. If users will pay, producers will charge. If the fee is not imposed, prices will go up anyway.

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[4] The recently introduced S. 871, which proposes an excise tax, also has attractive features.

Interestingly, there was qualified support for a fee, with a trust fund, in testimony of some user industries before the House Energy and Commerce Committee last Monday. NRDC is prepared to work with industry groups and the committee to craft appropriate fee legislation.

V. Interim Control Measures Should Be Adopted Immediately

The global environmental emergency facing us calls for immediately taking all practical steps to curb the emission of CFCs, halons, and related chemicals. Consequently, NRDC supports the various legislative proposals to promote recovery and recycling of CFCs, to ban certain patently nonessential uses, and to curb unnecessary halon releases. Through vigorous pursuit of these and other short-term measures, we can buy significantly faster recovery of the ozone layer.

NRDC supports the proposals in S. 491, S. 676, S. 870, and other bills to promote recovery and recycling from equipment containing CFCs, including the proposal to equip refrigeration equipment with service apertures, and the proposal to prohibit knowing releases of these chemicals. We support the idea of disposing of CFC-bearing foams in a manner that sequesters CFCs from the atmosphere.

Delegating EPA a general mandate to develop recycling rules is unlikely to produce results without specific deadlines and measures of performance, however. We suggest that legislation set specific goals and timetables for improvements in production process efficiency (e.g., lowering solvent use per unit in electronics manufacture), recycling of CFCs from installed equipment, and reduction of halon losses. We would be happy to work with the committee on specific proposals.

NRDC especially supports the enactment of national legislation requiring the use of recycling equipment in the service of auto air conditioners, and banning the sale of CFC-12 coolant in small cans. EPA estimates that 25% of all CFC production in this country is used in auto air conditioners. The average unit leaks so badly that it needs to be refilled three times during the auto's lifetime. The recycling program, plus banning the can, could cut this source of CFC emissions in half in as little as a year.

NRDC and Friends of the Earth are assisting state legislators in approximately ten states to develop legislation on auto air conditioner emissions. We have had the support and cooperation of important sectors of the automotive industry in this effort. Bills have already been enacted in Vermont and Hawaii.

But it is inefficient to move forward on this straightforward and almost noncontroversial measure state by state. The auto recycling program should be enacted at the federal level. This is an area where specific, broadly supported proposals are already ready. We would be pleased to work with the committee and with industry on perfecting language on this and other short-term emission control measures.

We must speak out against industry proposals to preempt state action. While federal actions in some areas, such as auto air conditioning, can hasten controls and make them more uniform, states have every right to act to protect their citizens where the federal government is not acting. NRDC believes the states are acting positively and responsibly and should continue to move forward until federal controls are adequate.

Conclusion

In conclusion, NRDC urges the committee to move forward immediately with legislation that will:

(1) Phase out CFCs, halons, and related chemicals such as methyl chloroform and carbon tetrachloride by 1995 and establish appropriate growth controls on the alternative fluorocarbons.

(2) Establish a CFC and halon production fee, with proceeds devoted to the development and demonstration of ozone- and climate-protecting chemicals and technologies.

(3) Take immediate steps to control unnecessary emissions, through recycling measures and targeted restrictions.

I would be happy to answer any questions you may have.

SAFEGUARDING THE OZONE LAYER AND THE GLOBAL CLIMATE FROM CHLOROFLUOROCARBONS AND RELATED COMPOUNDS

A Statement from the International Environmental Community Concerning the Urgent Need to Strengthen the Montreal Protocol on Substances that Deplete the Ozone Layer

Helsinki, Finland
May 1, 1989

It is now beyond doubt that chlorofluorocarbons ("CFCs"), halons, and related chemicals are causing massive depletion of the stratospheric ozone layer and a substantial increase in the global greenhouse effect. The danger is on a scale almost too large to grasp.

For the human population of the planet, increased ultraviolet (UV) radiation passing through an ozone layer weakened by CFCs and related chemicals will mean tens of millions of cases of skin cancer, cataracts, and, possibly, serious immunological disease. Enormous damage will also be done to the natural environment, ranging from substantial crop yield losses to the potential collapse of the marine food chain.

These chemicals are also substantial contributors to the greenhouse effect and consequent climatic change. This decade has seen the five hottest years on record. Climatic disruption from the greenhouse effect will wreak havoc on the world's agriculture, coastlines, and forests. The resulting stresses threaten to fracture the economic, social and political structures necessary for global security and development. The consequences of global warming will include drought, flooding, and loss of agricultural production. CFCs and related chemicals are responsible for 10 to 20 percent of the global warming effect and are the greenhouse gases most readily controlled.

The signing of the Montreal Protocol on Substances that Deplete the Ozone Layer in September 1987 was an historic first step toward protecting our planet from ozone depletion and the greenhouse effect. But in the short time since then, dramatic scientific findings have shown that the Protocol does not go nearly far enough to protect the ozone layer or stabilise the climate.

The Protocol was predicated on a scientific assessment that is now badly out of date. The massive Antarctic ozone "hole" was simply excluded from consideration. Now, however, CFCs and related chemicals stand convicted of causing the Antarctic "hole" and of contaminating the Arctic stratosphere in similar fashion. CFCs are also the probable cause of ozone losses taking place on a global scale at a faster rate than scientists had previously predicted. In addition, the greenhouse properties of these gases can no longer be ignored.

Matters will continue to deteriorate under the Protocol as it is currently written. Even with universal observance of its current control measures, the atmospheric stockpile of these ozone-depleting and greenhouse gases will grow steadily larger, at least doubling from their current levels by 2050.

This new scientific understanding confronts the people of the world with a genuine global emergency. The crisis can be met only by a crash programme, on a global basis, to eliminate production and use of the offending chemicals and provide suitable alternatives. The safety of the ozone layer and the stability of the climate allow no other option.

The overriding objective of national and international policies to protect the ozone layer must be to cleanse man-made chlorine and bromine compounds from the stratosphere as rapidly and completely as possible. The ozone layer will not be healed until the stratospheric concentrations of these compounds are driven down to the levels prevalent before their accumulation began.

Nations and industries should not assume that they can simply replace these chemicals with new chemicals in the same family. At the present time, private investment into alternatives is disproportionately controlled by CFC producing companies, who are overemphasising the development of close variants of the current chemicals. Production processes and end-use applications which are less reliant on such chemicals, more energy-efficient, or both, are receiving short shrift. At the same time, these companies are beginning to reap multi-billion dollar windfall profits as controls on the supply of controlled substances force prices to rise.

The priority should be placed instead on finding solutions consistent with economic and developmental needs that minimise the use of chemicals which have potential health and environmental effects. The economic development of neither the industrial nations nor the developing countries necessarily requires the same patterns of use of solvents, blowing agents, fire retardants, and even refrigerants that have obtained in the past.

The industrial nations have been, and are now, the main source of CFCs and related chemicals and therefore bear the main responsibility to ensure that measures are implemented to address ozone depletion and climatic change. At the same time, they must see that developing nations, whose problems are greatly aggravated by population growth and development pressures, are assisted in improving their economies and the living conditions of their citizens.

Environmental organizations first proposed a rapid global phase-out of CFCs, halons, and other ozone-depleting chemicals in June 1986, as governments prepared for the talks which led to the Montreal Protocol. That proposal was rejected in favor of the present modest curbs on selected chemicals over a decade-long schedule. The positive effect of even these limited measures is diminished by growth allowances in developing countries and in the industrialised world.

But the seriousness of recent scientific developments is beginning to be felt by governments and industries. The need for a global phase-out of the substances currently controlled, and for controlling additional chemicals not yet within the Protocol, is now gaining broad acceptance.

The undersigned nongovernmental organizations offer this statement to propose specific steps that all nations must take to safeguard the ozone layer and the climate from CFCs and related compounds.

The global emergency requires a dual strategy of international cooperation and national action to assure the fastest possible emission reductions by the greatest number of nations. We call on all nations immediately to join in and abide by the Montreal Protocol. We call on the parties to the Protocol to amend and strengthen it no later than April 1990. We call on each nation individually to take all available steps to curb emissions of ozone-depleting substances.

Amendment of the Montreal Protocol

1. Strengthened Control Measures

Several chemical producers and a number of governments have stated their objective of phasing out CFCs by the turn of the century. The world cannot afford to wait this long. In view of the seriousness of the global environmental emergency, the need is for an immediate end to the production and use of ozone-depleting chemicals.

*Accelerated Phase-Out Requirements. The Protocol must be amended to provide that all countries immediately undertake a crash programme to completely phase-out production and consumption of the five CFCs and three halons currently subject to the Protocol, and three additional ozone-depleting chemicals: methyl chloroform, carbon tetrachloride, and methylene chloride. Each nation should immediately take all necessary steps to phase-out these chemicals as rapidly as possible, with the objective of completing the phase-out by 1992, and in no case later than 1995.

* Aerosols. An absolute ban must be placed on use of any ozone-depleting or greenhouse gas as an aerosol propellant (except for essential medical uses) no later than 1990. National CFC production should be cut by at least the amount previously directed to the aerosol applications.

* New Chemicals in the CFC Family. The new variants on CFCs -- the hydrochlorofluorocarbons (HCFCs) and the hydrofluorocarbons (HFCs) -- pose a special dilemma. On the one hand, HCFCs are ozone-depleting compounds, and the ozone layer is already badly overloaded with chlorine. Both HCFCs and HFCs also raise greenhouse concerns.

On the other hand, they can serve as "bridging" chemicals in certain uses, allowing the earlier phase-out of the CFCs currently subject to the Protocol. In such uses, ozone depletion potential is reduced by 90-100 percent. Thus it is appropriate neither to phase out these chemicals on the same schedule as the fully-halogenated CFCs nor to continue to leave them out of the amended Protocol.

The amended Protocol should add these chemicals to the list of controlled substances. Sufficient interim growth should be allowed to displace the currently controlled CFCs, but not so much as to allow these new chemicals to worsen ozone depletion or the greenhouse effect. Further, these chemicals should be limited to uses from which they will be recovered and to uses which are proven to deliver higher energy efficiency than any other alternatives.

* Maximise Recovery and Recycling. The Protocol should require maximum recovery and recycling of CFCs and other controlled chemicals in all industrial processes and during the service and disposal of products containing these chemicals.

* Labelling. Internationally standardised warning labels should be adopted for all products containing or made with controlled substances, in order to inform consumers.

2. Developing Countries Provisions

The provisions of the Protocol for technical assistance to developing nations have thus far been largely an empty promise. These commitments must be made real in order for developing countries to gain genuine access to and control over alternative technologies as CFCs and related chemicals are phased out.

* Technical and Financial Assistance. Expanded technical assistance and additional funding must be provided by industrial nations to developing countries to cover the added cost of complying with amended Protocol obligations.

* International Technology Transfer Fund. A cooperative international program should be established for the deployment of existing alternatives and the development of new ones that will assist all nations, particularly developing nations, in meeting the obligations of the amended Protocol. Industrial nations should be responsible for the majority of funding for this program, which may be raised by measures to recoup from producers the multi-billion dollar revenue increase expected to result as CFC prices rise during the phase-out period.

* Schedule for Compliance. The amended Protocol should permit developing countries up to five additional years to comply with the requirements for phasing out CFCs, halons, and solvents. No delay should be allowed for the aerosol ban or for the provisions relating to the HCFCs and HFCs.

3. Inducements to Participation and Compliance

* Trade Sanctions. The Protocol's trade restrictions must be strengthened and brought into effect immediately, both against non-signatories and against violators, in order to heighten inducements for all nations to join in and abide by the Protocol. In order to assure cooperation by all nations, these restrictions must reach beyond trade in CFC-related products. The application of these sanctions to developing countries should be linked to the availability of the measures for financial and technical assistance discussed above.

* Reporting and Publication of Data. The Protocol should require national governments to report and publish the production, import, and export of each individual chemical from each individual company and production facility.

National Ozone Protection Policies

We urge each nation to adopt and implement national ozone protection policies at the earliest possible date. No nation can responsibly defer action until the Protocol is amended. Each nation has a duty, to its own citizens and to the entire world, to control its production, consumption, and emission of these chemicals as quickly as possible.

Many nations have already made commitments to the rapid and complete control of the fully-halogenated CFCs. Norway, Sweden, and the Federal Republic of Germany, for example, aim to cut CFC consumption by at least 95 percent by 1995.

Individual countries should take steps to redirect the unearned increase in CFC producers' profits into the development of a broader range of alternative technologies, emphasizing reductions in the initial use of ozone-depleting and greenhouse gases, the recovery and recycling of those which are used, and maximum energy efficiency. Charges, taxes, auctions, or other instruments should be used to recoup the unearned revenue increase. Public investment in high efficiency CFC-free refrigeration, CFC-free insulation, CFC-free electronics production, and halon-free fire protection should receive the highest priority. Technologies developed through such public investment should be made available, without patent protection, to all nations.

An informed citizenry is essential to solving these severe global problems. Each nation has a duty to see that its citizens are educated on the health and environmental consequences of ozone depletion and the greenhouse effect, and the solutions thereto.

Conclusion

We call on all nations to cooperate in amending the Montreal Protocol as recommended herein. We pledge that we will work in good faith with all governments, industries, and others to achieve this result.

Helsinki, Finland
May 1, 1989

INTERNATIONAL

Environmental Liaison Centre (ELC)
Friends of the Earth International
International Organization of Consumers Unions (IOCU)
World Wide Fund for Nature (WWF)

EUROPEAN ECONOMIC COMMUNITY

European Environmental Bureau (EEB)
Bureau Europeen des Union de Consommateurs

ARGENTINA
Movimiento Ecologico Argentino

AUSTRALIA
Australian Committee for the International Union for Conservation of Nature and Natural Resources
Australian National Parks Council
Conservation Council of South Australia
Conservation Council of South East Region and Canberra, Inc.
Conservation Council of Victoria
Conservation Council of Western Australia
East Gippsland Coalition
Environment Centre (Northern Territory)
Friends of the Earth
Nature Conservation Council of New South Wales
Queensland Conservation Council,Inc.
Tasmanian Conservation Council, Inc.
Victorian National Parks Association
The Wilderness Society
Wildlife Preservation Society (Qld.)
World Wildlife Fund - Australia

BELGIUM
Bond Beter Leefmilieu
Inter-Environnement - Wallonie
WWF - Belgique

CANADA
Friends of the Earth
Canadien Environmental Law Association
Pembina Institute for Appropriate Development
West Coast Environmental Law Association

DENMARK
Danish Society for the Conservation of Nature (Danmarks Natur Ferdnings Forening)
NOAH

FEDERAL REPUBLIC OF GERMANY
Bundesverband Burgerinitiatitiven Umveltschutz
Bund fur Umwelt und Naturschutz

FINLAND
Finnish Association for Nature Conservation
Finnish Society for Nature and Environment
Kuluttajat - Konsumenterna ry (Consumers Association)

FRANCE
Bulle Bleue
Crepan
Les Amies de la Terre (FOE)
Silence

GHANA
Friends of the Earth

GREECE
Greek Environmental Federation (E.P.T.A.)

HONG KONG
Friends of the Earth

HUNGARY
Greenway

IRELAND
Earthwatch
Irish Wildlife Federation

ITALY
Amici Della Terra

JAPAN
Atmosphere Defence Citizen Council
Chikyu no Tomo

MALAYSIA
Asia-Pacific Peoples Environment Network (APPEN)
Environmental Protection Society of Malaysia
Sahabat Alam Malaysia (SAM)

NETHERLANDS
Gelderse Milieufederafie
Stichting Natuur en Milieu
Vereniging Milieudefensie

NEW ZEALAND
Friends of the Earth

NICARAGUA
Asociacion de Biologos y Ecologos de Nicaragua

NORWAY
Norweigan Society for the Conservation of Nature (Norges Naturvenforbund)

POLAND
Polish Ecological Club (PKE)

PORTUGAL
Quercus

SPAIN
ADENA (WWF)
AEDENAT
ADENEX
CODA
EGUZKI (Basque Country)

SWEDEN
Faltbiologerna (Swedish Youth Association for Environmental Studies on Conservation)
Jordens Vanner
Miljoforbundet (Environmental Federation)

SWITZERLAND
World Wide Fund for Nature - CH

UNITED KINGDOM
British Trust for Conservation Volunteers
Friends of the Earth - Scotland
Friends of the Earth - UK
The Green Alliance
United Nations Association of the United Kingdom
World Wide Fund for Nature - UK

UNITED STATES
Center for Innovative Diplomacy
The Commission for Church in Society of the Evangelical Luthern Church in America
Friends of the Earth U.S.A.
Institute for Energy and Environmental Research
Izaak Walton League of America
National Audubon Society
National Council of Churches
National Parks and Conservation Association
Natural Resources Defense Council (NRDC)
Public Citizen
Renew America
Safe Energy Communication Council
Save the World
Sierra Club
United Methodist Church (General Board of Church and Society, Department of Environmental Justice and Survival)
U.S. PIRG
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May 17, 1989

Chairman Max Baucus
Subcommittee on Environmental Protection
of the Committee on Environment and
Public Works
U.S. Senate
Washington, D.C. 20510-6175

Dear Chairman Baucus:

The Alliance for Responsible CFC Policy (the "Alliance") hereby submits its written testimony for the Subcommittee's May 19, 1989 hearing concerning pending legislation to control the manufacture, use, and disposal of ozone depleting substances, relevant portions of S.503, the Chlorofluorocarbon and Halon Reduction Act of 1989; S.491, the Stratospheric Ozone and Climate Protection Act of 1989; S.676, the Global Environmental Protection Act of 1989; and S.333, the Global Environmental Protection Act.

The Alliance is an industry coalition of all five domestic manufacturers of fully halogenated chlorofluorocarbons ("CFCs") and several hundred users of CFCs, including small, medium, and large businesses and/or their trade associations. Its members are fully involved in almost every type of industrial operation that produces, uses, or otherwise relies on CFCs. Therefore, the Alliance is extremely interested in:

domestic efforts to implement international and domestic restrictions on CFC use and production; United States governmental actions that could affect the availability of CFC substitutes; and proposed amendments to the international agreement limiting CFC use and production. Accordingly, the Alliance has taken this opportunity to provide you with its written testimony concerning the CFC issues that your Subcommittee will be considering during its hearing on May 18, 1989.

INTRODUCTION

Since its formation in 1980, the Alliance has been very involved in the domestic and international efforts to regulate CFCs. The Alliance actively supported the global CFC-control programs created by the Vienna Convention and the Montreal Protocol. The Alliance participated in all phases of the Environmental Protection Agency's ("EPA's") recent CFC rulemaking proceedings and strongly endorsed EPA's final CFC Rule published at 53 Federal Register 30466 (August 12, 1988). The Alliance opposed EPA's concurrent Advance Notice of Proposed Rulemaking, 53 Federal Register 30604 (August 12, 1988), which we understood was issued in response to pressure from the Office of Management and Budget to obtain revenue from CFCs to help reduce the federal deficit.

EPA's existing CFC Rule is a well-developed and highly effective regulation. It will fully implement the United

States' international obligation to develop a reliable method of substantially reducing domestic CFC production and consumption. The rule has been designed to minimize government involvement in business decisions and to ensure that the nation's economy will make a smooth transition away from CFCs. Because the rule will not take effect until July 1, 1989, it is premature to try and revise it without determining its effectiveness. Accordingly, the rule's basic framework for implementing internationally agreed upon CFC restrictions does not need to be altered.

Because new scientific data concerning the stratospheric ozone level continue to become available, the Alliance has recognized that additional CFCs restrictions will be required at the international level. (Unilateral restrictions would unduly harm our economy and lifestyle, would not significantly affect global stratospheric ozone levels, and could be counterproductive in achieving international reductions.) Accordingly, the Alliance has committed itself to working for additional global restrictions on CFCs through the Montreal Protocol renegotiation process. Consistent with these efforts, the Alliance seeks an international agreement to phase out CFCs to the maximum extent feasible as substitutes become available, leading to a total phaseout. However, the timing for any new CFC restrictions to accomplish the phase out must hinge on the availability of safe and effective CFC substitutes for new applications as well as for the more than $135 billion in installed equipment that relies on the current CFC compounds.

The development and availability of CFC substitutes are essential to the smooth transition away from CFCs. More than 700,000 jobs and $28 billion in annual goods and services in the United States rely on the current CFC compounds. Critical industries employing CFCs include: refrigeration; air conditioning; electronics; medical; automobiles and other transportation industries; and highly efficient foam insulation. Each step in the shift away from CFCs must be carefully orchestrated so as to minimize economic disruption or interference with the quality of life in the United States.

GENERAL COMMENTS

I. EPA's Existing CFC Rule Should Not Be Amended To Include Either A CFC Auction Or A CFC Fee, And No Tax Should Be Imposed

EPA's CFC Rule restricting domestic production and consumption of CFCs fully implements the Montreal Protocol and would not be improved by the addition of a new provision mandating CFC allocations through either a CFC auction or fee or through a tax. Nor would imposition of a fee, auction scheme or tax assist in protecting the environment. In fact, the addition of such economic exactions would seriously undermine the effort to move away from CFCs by creating substantial uncertainty and unnecessary economic and social disruptions.

Adoption of either a fixed fee or auction system as a means of allocating CFC production rights would have an unreasonable adverse financial effect on all CFC producers, CFC-user industries, and consumers. If EPA were to employ either system, the cost of United States-made CFCs and CFC-based products would necessarily rise, and the increase could be devastating to specific segments of our economy. A tax could entail similar adverse consequences. In addition, because CFCs play such a large role in many of our nation's industries, the resulting price increases would have a significant inflationary effect on the economy as a whole.

Price increases under either OMB allocation scheme could be enormous. An auction system would produce unpredictable price increases, and it has the potential for substantial price jumps driven by panic buyers, speculators, or wealthy foreign concerns. Furthermore, an auction would necessarily include the major cost of supporting a new bureaucracy created to auction rights critical to 375,000 United States businesses and their foreign competitors.

A fixed fee system would produce more predictable price increases. However, a fixed fee has the potential for driving prices beyond the level of an auction. For example, recent CFC-fee proposals have called for a $2.00 per pound tax on products that now cost less than $1.00 per pound. Regardless of how EPA might choose to impose additional charges on the CFC industry, those cost increases would be borne by each level of the United States economy. Every link in the CFC production and consumption chain would necessarily pass along and mark up its increased CFC costs. Similar effects would result from a tax.

A CFC auction or fee system or tax could destroy certain sectors of the nation's industry. CFC-users in the energy-efficient foam insulation business are extremely price sensitive. Substantial CFC price increases would wreck their ability to adopt currently unavailable alternative blowing agents to modified process facilities, thereby eliminating the ability of this industry to effectively compete with the makers of less costly and less energy-efficient foam insulation.

Destruction of the CFC foam insulation business could render unpromising current efforts to test, develop and utilize HCFC 141b, an otherwise promising substitute for insulation and certain other current CFC uses, since foam insulation is the largest part of the potential market for HCFC 141b and the other potential uses by themselves are probably not large enough to justify development efforts.

If an auction system were employed, speculators could hoard CFC rights and cripple any price sensitive CFC industry. Furthermore, an auction system would leave United States industry vulnerable to foreign concerns. Foreign industry would be free to acquire the United States' CFC rights under the Montreal Protocol and use those rights at overseas production facilities to sell incremental low-cost production from facilities not hindered with government imposed costs, or to extract further exactions from the CFC dependent industries.

The United States is the only major Protocol participant to propose to establish a punitive revenue-raising scheme on the CFC using and producing industries. The use of a fee or auction system or tax could substantially harm the international competitiveness of domestic industries that rely on CFCs. Any significant price increases mandated solely within the United States by costly allocation or tax schemes would make U.S.-produced CFCs less competitive in the world market. If the United States were to mandate CFC production fees or auctions or impose a tax, its actions would be directly contrary to the approach being employed by other countries. Instead of imposing additional economic burdens on their CFC-based industries, the Japanese government is providing substantial financial incentives and subsidies to ease the transition away from CFCs; and the European governments are remaining neutral and letting free enterprise function. If the United States embarks on the path of imposing unreasonable economic burdens on the CFC industry, domestic user and producer industries may be compelled to move their operations offshore in order to survive, or to conclude that the competitive disadvantage is insurmountable to continue operations.

It should be recognized that the United States economy and lifestyles are much more dependent on CFCs than is the case for other industrialized nations, where refrigeration and air conditioning are much less widely used. For example, much of Europe's current CFC use is for aerosols, which the U.S. discontinued in the 1970's and for which lower cost substitutes are readily available.

The acknowledged need to reduce and restrict CFC production should not be used as an opportunity to reduce the nation's deficit by imposing a potentially destructive tax on CFC producers and users. The Bush Administration's proposed budget for fiscal year 1990 includes a provision to raise $400 million in revenue by "charging market rates for the right to produce chlorofluorocarbons." The Administration proposes to raise $1,400 million from CFCs in the following year. That proposal is simply a tax on all CFC-based industries; it is in no way related to the goals of the Montreal Protocol. As proposed, the budget seeks to collect an amount of revenue that is well in excess of the price increases predicted to occur as the Montreal Protocol's CFC restriction take effect. This revenue-raising proposal would subject certain industries to an uneven tax burden (raw materials price increases of 200% or more) that could destroy them.

Comparing the Bush Administration budget proposal to estimates of the impacts of the Montreal Protocol prepared by the economic consulting firm of Putnam, Hayes & Bartlett, (see Exhibit I), shows that the proposed Bush CFC revenue schedule is $1.6 billion greater than projected Protocol compliance costs. Additional carrying costs through the distribution chain as a result of this proposal are likely and can be expected to impose more than $2 billion in added costs on the CFC user and producer industries.

CFC fees or auctions would simply burden the United States economy without producing any positive environmental benefits. In reality it will slow down the alternative effort due to the shortage of investment capital and reduction of future business potential.

In its present form, EPA's CFC Rule provides an efficient and workable system for allocating CFC production rights -- at whatever levels are thought needed to protect the stratospheric ozone, now or in the future. Imposing economic exactions on CFCs would in no way enhance our ability to protect the environment or to otherwise implement the Montreal Protocol. While these CFC charges imposed by EPA would raise substantial sums for the United States Treasury, they would not provide money for specific environmental improvement measures.

By imposing CFC charges, EPA would significantly reduce the amount of money available for industry's work on a critical environmental improvement program -- rapid development of CFC substitutes. The proposal to charge United States industries that produce or rely on CFCs will only siphon away the capital stream they need to develop CFC substitutes and to fund the related research necessary to adapt their production technologies to these CFC substitutes. U.S. producers have estimated restructuring costs of $2-3 billion over the next 10 years. The user industries are expected to spend at least that much to learn how to utilize and to implement the new chemicals and alternative technologies.

America's industry is already losing the value of the established CFC business. It is investing heavily in the development of CFC substitutes, but billions of dollars are needed to attain commercial production. Money needed for this research and development effort should not be diverted to the U.S. Treasury as a deficit-reduction tool. The United States has too many industries that need CFC substitutes, and our economy cannot afford to let foreign competitors gain an edge in the race for substitutes in this narrow window of opportunity to restructure thousands of businesses in a broad range of industries.

Increasing the cost of CFCs through an EPA exaction or a Congressional tax will not speed the development or commercial availability of CFC substitutes. As noted above, such exactions would only inhibit that effort by diverting much-needed funds away from current research and development programs. Furthermore, until substitutes are available for a particular use, that user industry must continue to employ CFCs. Accordingly, an exaction driving up CFC costs cannot help encourage companies to switch to nonexistent substitutes.

Approximately 30-40 percent of current CFC use in the United States is to service existing installed equipment. Exhibit II is an estimate of existing equipment categories relying on these compounds and some of the annual cost impacts of the Administration's $2/lb CFC auction fee proposal. With no realistic hopes of any CFC substitutes for many of these equipment categories in the near term, the user industries will be forced to rely on the existing compounds and pay the exaction.

Recent developments demonstrate that a fee or auction is not needed to help spur industry to develop CFC substitutes. United States industry recognizes that an international race has begun for the CFC substitute market. As a result, American companies have been working rapidly to develop and patent substitutes, build pilot and production plants, and to adapt end-use businesses to employ these substitutes. Alliance members and others have voluntarily joined in joint toxicity testing programs designed to accelerate the commercial availability of substitutes. It is in the interest of all CFC-based industries, producers and users alike, to see the switch to CFC substitutes made as rapidly as possible. Producers want to capture a share of a growing business, and users want to be able to plan now for the long-term future. Measures which in practice would delay substitutes would not make sense from a long-range planning perspective. All companies recognize that they will need to shift to CFC substitutes when they become available.

OMB should abandon its drive to force EPA to allocate CFC production rights through auctions or fees, not only because that effort is unsound economics and environmental policy, but also because EPA lacks the legal authority to promulgate such a rule. Neither the Clean Air Act ("CAA") nor the Toxic Substances Control Act ("TSCA") provides authority for any CFC fee or auction system regulation. In fact, the statutory provisions relied upon by EPA for its August 12, 1988 ANPR proposals (42 U.S.C. § 7457(a) (CAA) and 15 U.S.C. § 2605(a)(5) (TSCA)) are devoid of any express or implied authority to collect CFC fees or to collect funds through a CFC auction. Furthermore, both the CAA (see 42 U.S.C. § 7420) and TSCA (see 15 U.S.C. § 2625(b), elsewhere grant EPA specific authority to charge fees under those statutes only when EPA performs certain limited activities which are not applicable to EPA's direct regulation of CFCs. EPA's authority to collect fees under the Independent Offices Appropriations Act ("IOAA") is limited to the value of a government service provided to an applicant; it does not empower EPA to collect taxes for public-policy revenue generating reasons as EPA has proposed to do in the context of CFC regulation. See National Cable Television Association v. United States, 415 U.S. 336, 340-41 (1974). If EPA were to pursue its CFC tax alternatives, it would unconstitutionally usurp taxing authority from Congress. See U.S. Const. art. I, secs. 7 & 8.

While the Alliance recognizes that any tax should be imposed only by the Congress, it is concerned that CFC taxes would entail the same significant adverse and unwarranted consequences on U.S. industry, our economy, and our lifestyles as would comparable EPA exactions.

Both S. 503 and S. 871 propose to establish funds for the conduct of research on ozone protecting technologies. We applaud the sponsors for recognizing the substantial technological research and development work that will be necessary in order for us to accomplish a CFC phaseout. It is evident, however, that the privte sector users and producers have already initiated research programs in many different fashions to develop the necessary information for this effort. We know of no groundswell of support for a massive government funded research effort and are uncertain that even if one were established whether such a program could produce significant benefits in a timely fashion.

A limited number of desirable applications research projects have been identified by the airconditioning industry, and some joint government research programs are underway with the foam insulation, automobile, and refrigerator industries. For example, attached as Exhibit III is a summary of some of the recent joint industry-EPA research projects that were analyzed by the U.S. General Accounting Office. GAO concluded that "The projects are appropriately focused on the major uses of ozone-depleting chemicals," and that the Agency has gathered the support of the appropriate federal agencies and industry groups in the attempt to attain those reductions."

Furthermore, substantial industry research efforts are underway, both in joint efforts and on a proprietary basis. It is possible that a new research fund would only duplicate efforts already underway in the private sector.

Rather than establish a substantial fund looking for a research project, we believe it would be more appropriate to identify exactly what research needs are not being met and then determining the best means of accomplishing them. To our knowledge, no such listing has been prepared. Absent such an effort to identify the need, we cannot support the creation of a fund that will only inflate costs to all consumers.

The current regulatory framework of reducing the supply of the existing compounds (with a view towards complete phaseout) creates precisely the uncertain business environment to encourage all CFC producer and user industries to aggressively research and implement ozone protecting technologies.

II. EPA Should Follow The Mandates Of The Toxic Substances Control Act When Reviewing Potential CFC Substitutes

EPA's program for reviewing potential CFC substitutes ensures that appropriate safety determinations are made in accordance with the mandates of the Toxic Substances Control Act ("TSCA"). The Agency is well aware of TSCA's purpose and requirements and has initiated a program to review potential CFC substitutes.

TSCA sets forth very exacting standards that must be followed before a company is allowed to manufacture a new chemical substance for commercial applications. EPA is following that procedure in the case of proposed CFC substitutes that are new chemicals, i.e., that do not appear on the TSCA Inventory. As part of that process, the person who is proposing to manufacture a new chemical must provide EPA with all available data concerning the chemical's environmental and health effects. If questions are raised based on these submissions, EPA has the ability to require additional test data and block the use of the chemical as a CFC substitute until such data are provided or until an assessment of unreasonable risk is made on other bases. However, to insist that EPA establish automatic administrative roadblocks to the manufacture of a new chemical only because it is a proposed CFC substitute will simply impede the development of substitutes and is not consistent with TSCA's goal of protecting against "unreasonable" risk of injury to health or the environment. EPA must balance the perceived risk or statospheric ozone depletion from continued use of CFCs versus any potential risk of substitutes.

EPA has developed and should implement an appropriately balanced procedure for ensuring that existing chemicals that are potential CFC substitutes will not present unreasonable health or environmental risks. As with all TSCA-based programs, and consistent with Congress' intent, it is appropriate for industry to test these existing chemicals, and industry is carrying out its testing obligations. There is no reason for EPA to depart from its normal TSCA procedures for these existing chemicals just because they are potential CFC substitutes. Fewer than two dozen of the hundreds of thousands of existing chemicals currently are subject to significant new use rules. See 40 C.F.R. Part 721. When EPA issued those particular significant new use rules, it did so because it determined that these chemicals might pose a risk that needed to be evaluated before they were used for the defined new uses. See, e.g., 52 Federal Register 19860 (May 28, 1987) (promulgating significant new use rule for 11-Aminoundecanoic Acid). EPA has not made such determinations with respect to the potential CFC substitutes. Issuing a significant new use rule for the most widespread available CFC substitutes, e.g., HCFC 22, which is commercially available today, would be unwise because it would inhibit prompt substitution.

Despite EPA's reported intention to proceed with TSCA Section 8(a) and 8(d) rules, there is no need at present to issue TSCA rules to require individuals to provide EPA with health and safety data for all existing chemicals that have been identified as potential CFC substitutes. EPA is reviewing available data (including unpublished company data) concerning these chemicals to evaluate their potential health and environmental effects. If questions should arise concerning individual chemicals, it might then be appropriate for EPA to require the submission of data as it has done in the past for dozens of other existing chemicals. See 40 C.F.R. Part 716; see also 52 Federal Register 16022 (May 1, 1987). However, such a rule should be issued only when there are significant concerns about increased exposure, toxicity, or adverse health or environmental effects, not just because the chemical is a CFC substitute or a potential substitute.

EPA's TSCA review of these existing and new chemicals must be performed in light of TSCA's mandate to balance risks. Congress enacted TSCA to guard against "unreasonable" risks. TSCA Section 2. In fulfilling that obligation, EPA is to "consider the environmental, economic, and social impact" of its implementing actions. Id. EPA has done just that by reviewing data concerning these chemicals using its normal TSCA procedures. EPA has properly recognized the pressing need to develop appropriate CFC substitutes and has structured its review procedures to safeguard public health and the environment while enabling industry to move quickly to meet important national and international goals. Both industry and EPA are taking appropriate steps to ensure that CFC substitutes are developed that do not pose unreasonable risks.

III. It is Premature for The United States To Commit Itself to a Complete Phaseout of CFCs by the Year 2000, and it is Unwise To Subject CFC Substitutes to Protocol Restrictions

Three issues have arisen concerning the negotiation of additional control measures under the Protocol -- changes in the interim control step in 1993, the adoption of a phaseout timetable, and the potential coverage of the HCFC compounds.

A. Interim Measures. Short-term changes in the control measures between now and the end of the century have little impact on the long-term chlorine concentration in the atmosphere. Exhibit IV is a graph presented by the Environmental Protection Agency at the recent Helsinki meeting. The graph clearly illustrates that adjustments in the current CFC control schedule makes virtually no significant difference in atmospheric chlorine concentrations between now and the year 2000 if we are working towards a phaseout.

Acceleration of the current control schedule would, however, significantly disadvantage the U.S. economy, where the installed base of equipment relying on the current CFC compounds is substantially larger than anywhere else in the world. Changes in the 1993 control measure could create considerable chaos in the marketplace. Other countries should not be rewarded economically for now reducing aerosol propellant uses of CFCs. Changes in the interim control measures would be particularly troubling for U.S. consumers where our critical uses, e.g., refrigeration and air conditioning, plastic foam insulation, and electronics cleaning, are already being affected by the current control schedule. The U.S. should resist any changes in the 1993 control measures.

B. Phaseout. When formulating the United States' position for modifications of the Montreal Protocol, EPA and other federal authorities should not call for or accept the complete phaseout of CFCs by the year 2000. Almost all observers recognize that the complete elimination of CFCs is desirable as soon as possible. However, absolute phaseout must be conditioned on the availability of adequate quantities of appropriate CFC substitutes, both for existing equipment and new equipment and technologies.

Too many uncertainties exist regarding these CFC substitutes to allow the United States to commit itself to a specific date for the complete phaseout of CFCs. Due to unforeseen circumstances, a complete phaseout might prove to be impossible. As the TSCA concerns noted above suggest, the results of ongoing toxicity tests could be adverse and might preclude the use of some currently promising substitutes.

National security needs might require the continued production of some CFCs for specific, vital military purposes. We understand for example that the Navy has said it will require CFC 114 for its ultra quiet nuclear submarines and other ships for decades. Under such circumstances, the United States' national security could be jeopardized or at best be dependent on the Protocol Parties' willingness to grant an exception to the United States. Other critical sectors of our national economy may well need some limited CFC production beyond the year 2000.

The United States has announced its support for a phaseout, so long as safe substitutes are available. We will not know the answer to this question for several years, and we do not yet know what the results of the EPA "vintaging study" designed to identify the needs of existing equipment during the transition period, will show once completed. Also, a great deal of emphasis is being placed on recycling and recovery techniques "producing" additional supply for the phaseout period, but it is still too early to know how effective or productive these programs will be. We do know that 30-40 percent of current CFC use is necessary simply to service existing equipment relying on these compounds.

In the past, the phaseout concept has meant an 85-95 percent reduction in production of new material. It is not appropriate at this time to accept or acquiesce in scenarios that suggest a 100% percent phaseout by the year 2000 is achievable. It would be irresponsible to negotiate on behalf of the United States to phaseout by the year 2000 without some safety valve that would allow for some production if in fact it is shown to be necessary. If national security interests require production in the range of 5-10 percent, it would not be desirable to place the United States in the position of having to go back to the bargaining table to obtain permission from our global competitors in order to meet this need.

The current negotiating position should be based on reasonable expectations of what is likely to be achieved in the next ten years with a stated goal of achieving a phaseout consistent with the availability of safe and acceptable substitutes and assuring the needs of existing installed equipment. The Protocol provides for a continuing reassessment process, a process that is currently underway. Two more assessments are likely to be held prior to the year 2000. The governments can then agree upon the final phaseout schedule based on facts and not assumptions.

C. Coverage of HCFCs. U.S. industries are researching a variety of means to achieve the phaseout of CFCs. Based on currently available information, it appears that current uses of CFCs will be displaced by improved conservation techniques, use of not-in-kind chemicals or technologies, and the use of CFC substitute compounds known as

HCFCs and HFCs. Current expectations among industry representatives suggest tht the HCFCs and HFCs will capture less than 50% of the current CFC market. HCFC and HFC compounds offer the best opportunity for essential CFC uses to make a rapid transition away from the covered compounds. See Exhibit V, "HCFCs and HFCs Provide the Balance". The U.S. should oppose efforts to include CFC substitutes such as HCFCs in Protocol restrictions or to attempt to regulate these compounds unilaterally. To do so would very likely deter user industries from shifting to these substitutes, a shift which is now in progress. These industries must make substantial capital commitments to engineer facilities to apply the substitutes, and their customers, e.g., purchasers of air conditioning and refrigeration equipment, will need assurance that they will be able to use that equipment over its useful life. Such equipment will require a continuing supply of the heat exchange gases for which the equipment is designed. Delays in making such shifts will aggravate potential ozone depletion problems.

Any suggestion at this time that the HCFCs may be controlled would discourage industry investment in the further development or utilization of these compounds. Any discussion concerning this issue should focus on the fact that the strengthening of the Montreal Protocol in any responsible manner requires that these compounds be made available.

Without having the HCFCs, developing nations can be expected to hold out for a longer exemption for use of the current compounds. Major user nations, such as the United States, would be unable to rapidly shift into these promising new compounds, thereby delaying the substitution process and further extending the requirements for existing installed equipment.

The HCFCs and HFC compounds are critical to current uses in the air conditioning and refrigeration industry and in the foam insulation industry. If these compounds are hindered in their development or utilization, the ability of these industries to shift out of the current CFC compounds could be delayed by ten years or more.

It is estimated that the average ozone depletion potential of these compounds will be less than 0.05, approximately 0.025, or more than 97% better than the CFC compounds they are replacing. Furthermore, the atmospheric lifetimes range from 2 to 20 years, much less than for the CFCs.

At this time, it is impossible to predict how much utilization these HCFC and HFC compounds will achieve. Currently, however, it appears that these compounds will replace less than 50% of the current CFC uses on a worldwide basis, but these uses are critical to essential industries such as air conditioning and refrigeration, insulation, and electronics. In fact, HCFC-22 is widely used in the United

States at the present time for air conditioning and refrigeration.

It is these same technologies that are also attractive to developing nations. Therefore, it is critically important in order to provide for our own domestic needs and the needs of developing nations to assure that these non-CFC technologies will be available in the near future and beyond. To discourage the HCFC compounds will severely impede the effectiveness of the Protocol and will delay achieving its goals of environmental protection and economic efficiency.

In partial summary, EPA's existing framework for regulating CFCs continues to meet our nation's needs. The CFC Rule's production allocation system is a workable and appropriate device that should not be altered through the use of a fee, auction or tax system.

EPA should continue its normal use of its TSCA authority to ensure that current or potential CFC substitutes do not present an unreasonable risk to human health or the environment. No reason presently exists for EPA to ignore its normal TSCA procedures when reviewing data concerning CFC substitutes. EPA has the discretion and duty to make appropriate determinations under TSCA, and it has established procedures that enable it to balance the risks and benefits of commercial production of CFC substitutes.

The United States must adopt realistic negotiating positions during the Montreal Protocol reassessment process. Until adequate CFC substitutes are available, it is premature to call for a complete CFC phaseout by a date certain. Seeking a complete CFC phaseout at this stage could create serious problems for our national defense and national economic interests. Furthermore, the U.S. should resist changes in the interim 1993 control measure and any suggestions that the CFC substitutes such as HCFCs and HFCs should be included as a Protocol covered compound.

SPECIFIC COMMENTS

The following comments respond to the specific questions presented in or attached to the May 8, 1989, letter from Senators Max Baucus and John H. Chafee inviting the Alliance to present testimony at this time.

As to steps which the Alliance supports being taken internationally to strengthen the Montreal Protocol, the Alliance believes that the periodic reviews of stratospheric ozone science, which are contemplated by the Protocol, should continue to be held on a regular basis, that further restrictions on ozone-depleting substances should be agreed to internationally with due regard to the availability of substitutes and the need to continue to service and utilize the vast inventory of fixed equipment which requires CFCs for operation.

As to steps to be taken domestically to implement the Montreal Protocol, the basic allocated quota approach utilized in the CFC restriction rule promulgated by EPA in August, 1988, to go into effect July 1 of this year, provides efficient assurance of compliance with the Protocol. No other approach including economic exactions is necessary or appropriate, and economic exactions would be unduly disruptive.

As to the concern that CFC manufacturers not reap excess profits due solely to restrictions on the supply of CFCs, the Alliance is convinced that no action is needed at present. Some price increases are likely to occur, as economies of scale are lost and general inflationary pressures continue. It should also be recognized that the CFC manufacturers are, in general, in a good position to develop some of the more promising substitutes for CFCs but will require very substantial amounts of capital, in the billions of dollars, to carry forward toxicity testing, market potential evaluations, user applications, and the design and construction of appropriate manufacturing facilities. It should also be recognized that the manufacturers are losing their current CFC business to develop which very considerable efforts and expenditures have been made over the past 50 years or so.

It should also be recognized that vigorous and accelerated efforts are underway to develop substitutes. Industry and others are also working on a variety of measures or programs to conserve and recycle CFCs and, in general, to reduce emissions to the atmosphere. It remains to be seen how big a shortfall will occur between Protocol-allowed supply and actual demand for CFCs, and the extent of price increases. Economic analysis performed for the Alliance recognized the potential for CFC price increases as a result of the Protocol control measures. It is much too early, given that the control measures do not take effect until July 1, 1989, to act on this issue. The United States government can monitor CFC prices and it might be appropriate in the future, if substantial price rises occur, to consider whether profits that are truly excess profits are being realized and whether there is sufficient justification to impose an excess profits tax or other compensating exaction. Such an approach would be far preferable to the imposition of economic exactions at present, which would not be limited to a share of profits at all, but which could immediatly double or triple the cost to users of CFCs.

As to what steps should be taken to ensure that both users and producers undertake appropriate research development and marketing efforts to assure that the safest and most energy efficient substitutes are utilized within the shortest timeframe, it should be recognized that there is very widespread agreement throughout industry that CFCs must be replaced and must come into use as soon as appropriate substitutes are developed. The private sector has enormous incentives to develop and market substitutes, since the justifiable precautionary concerns about protecting the stratospheric ozone layer have in effect created a global market for such substitutes. From the standpoint of users, it is widely recognized that societal concerns will require shifts to substitutes, even if as seems likely they are significantly more expensive than CFCs have been, as promptly as possible. As to safety, EPA has adequate statutory authority and implementing programs under TSCA. Industry also has a very substantial interest in assuring safety to protect employees, consumers and the environment, and to avoid losses that would be suffered if substantial investments are made in potential substitutes which prove to be unacceptable for health, safety or environmental reasons. No additional governmental steps are warranted. Governmental exactions which increase the cost of CFCs where substitutes are not available will only damage our economy and our lifestyles.

It should also be recognized that CFC production is continuing and will continue within internationally-agreed limits, not out of concern for profits of manufacturers or users but rather because of the very high social utility of CFCs, which have been a remarkably versatile and useful family of chemicals and which have contributed very substantially to the high standard of living which this nation now enjoys. The economic and lifestyle disruptions that would be experienced by an abrupt cessation of CFC production would be enormous. Thus, it is reasonable to expect that, in the absence of adequate supplies of appropriate substitutes, all of the CFC production and use allowed under the Montreal Protocol will occur in one use or place or another. Economic exactions thus will only burden the economy, will contribute nothing to protection of the ozone layer and could in fact be environmentally counterproductive by removing existing incentives to develop substitutes to replace existing CFC uses.

As to assuring that acceptable substitutes are utilized, we believe that the private sector has ample incentive to move promptly. EPA has the authority to monitor such developments and to impose traditional command-and-control type regulations if it should conclude that available substitutes are not being appropriately utilized.

As to the level of effort being expended to develop substitutes, current CFC manufacturers and others are working vigorously and in extraordinary fashion to develop substitute chemicals (and obtain the benefits of global markets). In general, where users can see promising potential substitutes, they are designing equipment to utilize the substitutes or are already shifting to identified substitutes such as HCFC 22.

Pricing decisions for the regulated CFCs are made by individual manufacturers and the Alliance as such does not know whether or to what extent prices have increased because of the Montreal Protocol or might increase in the future. As noted above, the amount of any price increase may be significantly affected by the rapidity of substitution, and by decisions on the part of CFC manufacturers to charge less than what the market might bear because of their interests in maintaining good relations with substantial customers (for CFCs, potential substitutes, and a range of additional chemicals manufactured by the CFC producers), and by their perceived self-interest in maintaining in existence markets such as that for CFC insulation foam until such time as they can develop appropriate substitutes for the same markets. In brief, it does not seem possible now to accurately predict future price increases for CFCs.

As to the strong consensus that was expressed at the recent Helsinki meeting of the Parties to the Montreal Protocol for a complete phase-out of the substances regulated by the Protocol, the Alliance supports a complete phase-out but only with due regard to the availability of acceptable substitutes and the need to utilize the existing stock of capital equipment which requires CFCs. It should be noted here that producers and others have a significant incentive to develop "drop-in" substitute chemicals which could function appropriately in existing equipment, but there is no assurance that such substitutes will be developed for a wide range of current uses.

Discontinuance of CFCs for new equipment by the year 2000 appears to be a reasonable goal but should not be accepted as an inflexible requirement. The international negotiation process should be pursued on a continuing basis, to assure reasonable relationships between CFC production and the availability of substitutes.

It is unnecessary and it does not appear realistic to decide at the present time on the appropriate timing for mandatory reductions beyond those already required by the Montreal Protocol, a reduction of 50 percent from 1986 levels which is probably a reduction of about 60 percent from current levels. Given the enormous financial incentives and regulatory pressures to develop substitutes, the international community should be in a much better position five years from now than it is at present to decide on the magnitude and timing of further required reductions. Agreement now to any more significant reductions would simply be a gamble on the development of acceptable substitutes, which may or may not come into use within whatever timeframe might be specified. The Alliance does not believe it is responsible now to decide to forego future quantities of CFCs when the consequences of doing so may be to do without essential uses of those chemicals.

Our general comments set forth above provide the Alliance's position on mechanisms to achieve a phase-out of production and reflect the Alliance's support for the current

Montreal Protocol framework and the adequacy of EPA's allocated quota approach to assure implementation of the Protocol. They also indicate the Alliance's view that it is premature to determine whether excess profits are being realized or to impose arbitrary cost increases that would result from an EPA fee or auction or a congressional tax. There is no environmental benefit or economic justification for increasing costs to CFC users who currently lack available appropriate substitutes.

The Alliance supports minimizing the release of ozone-depleting chemicals to the environment, including conservation and recycling where feasible. EPA has ample authority under existing legislation such as TSCA to require use of feasible conservation and recycling, but a variety of voluntary efforts, presumably significantly influenced by environmental concerns and societal pressures, are already underway in this area. We believe that EPA should monitor developments. To date, we are unaware of any contention, or any factual basis for a contention, that appropriate substitutes exist and are not being utilized. Should such an unlikely situation arise in the future, EPA could promulgate appropriate command-and-control regulations to assure utilization of substitutes.

Respecting concerns about the buildup in the atmosphere of carbon tetrachloride and methyl chloroform, the

Alliance recognizes that its activities have concentrated on CFCs. Both chemicals have the potential to contribute chlorine to the atmosphere and thus present potential ozone-depletion problems. Carbon tetrachloride is used in the United States primarily as a raw material in the production of CFCs, which results in the release of at most minimal quantities of carbon tetrachloride to the environment. We understand that the chemical is more widely used abroad in uses which have been discontinued or not developed in this country because of concerns about toxicity and the availability of substitutes.

It does appear that methyl chloroform use has been increasing in this country because of its utility in a variety of applications. The Alliance believes it is appropriate to leave to other organizations discussion of the benefits of such uses and the consequences to society of restrictions on those uses. We note that EPA has recently issued an Advance Notice of Proposed Rulemaking which contemplates inclusion of these chemicals in the Montreal Protocol process and in implementing EPA restrictions. That proceeding should provide an appropriate opportunity to address potential effects on the ozone layer and costs and benefits.

With respect to the use of chemical substitutes which have a relatively small potential for adding chlorine to the stratosphere, the Alliance's general comments indicate that HCFCs should be regarded as part of the solution and not part of the problem. One should not lose sight of the enormous benefits in terms of ozone layer protection of widespread substitution of HCFCs for CFC 11 and 12, the largest volume, fully-halogenated CFCs. It is environmentally counterproductive to discourage such substitution. For such substitution to occur, users need assurance that the chemicals may be used for a substantial period of time, as they are designed for use in long-lasting, durable equipment reflecting substantial manufacturing investments and purchases by ultimate users who can justify such purchases only with a reasonable assurance of an adequate supply of chemicals necessary for continued operation of the equipment over its projected useful life.

In brief, it is inadvisable and less than responsible to forego substantial reductions in additional contributions of chlorine to the atmosphere in the uncertain hope that somehow more perfect solutions will be developed. It should also be noted that the current search for substitutes is by no means confined to HCFCs. As noted above, HFCs, which contain no chlorine, are also being vigorously explored for potential commercial uses, and other families of chemicals and other technologies are also under scrutiny. It is conceivable that eventually non-chlorine compounds will come into very widespread use. It seems very reasonable at present, however, to accept and indeed welcome rather long-term replacement of

CFCs by HCFCs, since a complete replacement would reduce chlorine contributions to the stratosphere from these materials by approximately 97 percent.

It may also be worth noting that while chlorine in the stratosphere is known to have the potential to decrease the ozone layer, other atmospheric chemical processes tend to increase the ozone layer, to a degree scientifically estimated a few years ago to be about three percent over the long term. Scientific analysis of all of the known atmospheric perturbants that influence the ozone layer should continue. While efforts may be undertaken to modify releases which contribute to atmospheric chemistry processes which tend to increase the ozone layer, such a program is likely to be of a very long range nature, in contrast to atmospheric lifetimes of HCFCs in the range of two to twenty years. The suggested continuing scientific scrutiny, which will almost certainly occur, may indicate that if CFC releases of chlorine to the atmosphere can be reduced 97 percent within the next few decades, the case for additional controls might be quite different from what many now believe it to be.

The immediate, and by far most pressing problem, is to replace CFCs with acceptable substitutes. In a sense, HCFCs have already substituted substantially for CFCs and have the potential for significant additional replacements. These replacements should be welcomed, not discouraged.

Respectfully submitted,

Kevin J. Fay

Kevin J. Fay
Executive Director

Appendices

Exhibit I

COMPARISON OF BUSH BUDGET PROPOSAL AGAINST PROJECTED PROTOCOL COSTS

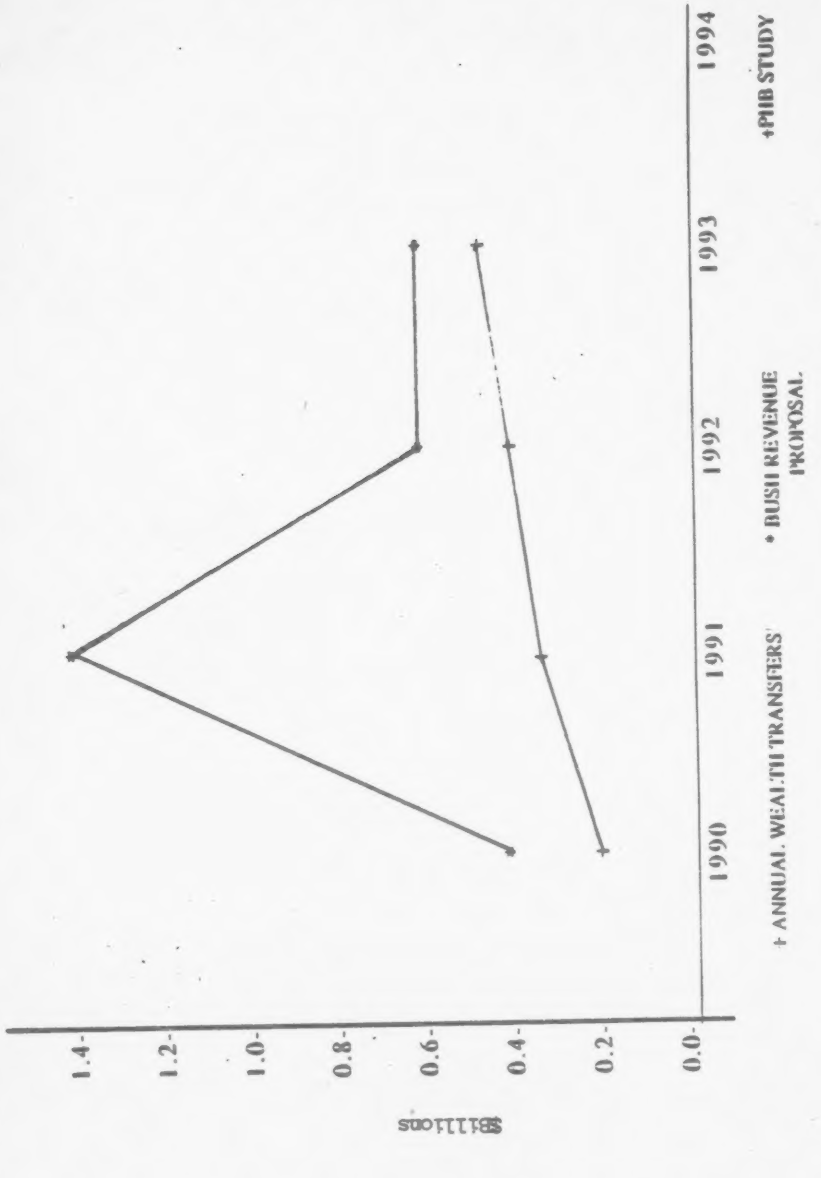

Exhibit II

POTENTIAL
COSTS
OF
BUSH ADMINSTRATION
CFC AUCTION/TAX PROPOSAL

CHILLERS

ASSUMES 25% RECHARGE PER YEAR

TYPE	NO.	IMPACT
CFC-11	80375	$550
CFC-12	10346	$800
CFC-114	4018	$625
CFC-500	5027	$650
RECIPR.	75073	$75

TOTAL ANNUAL COST $63,892,250

RETAIL FOOD REFRIGERATION

165,500 R-12 UNITS
165,500 R-502 UNITS

UNITS ARE INPLACE IN:

40,000	SUPERMARKETS
180,000	CONVENIENCE STORES
250,000	RESTAURANTS

ESTIMATED ANNUAL FEE IMPACT PER UNIT

R-12	$316.80
R-502	$186.12

TOTAL ANNUAL COSTS $83,233,260

COLD STORAGE WAREHOUSES

ESTIMATED SQUARE FEET

R-12	3,940,000
R-502	59,500,000

ASSUMING 20% RECHARGE RATE PER YEAR

ANNUAL FEE IMPACT

R-12	$992,880
R-502	$14,994,000
TOTAL ANNUAL COST	$15,986,880

PROCESS REFRIGERATION

TYPE	NO.	IMPACT
ICE RINKS	200	$5600
REFINERIES & CHEMICAL PROC. PLANTS	4,000	$15,030
ICE MACHINES		
MED.	1,840,792	$2
LARGE	157	$25
X-LARGE	20	$330
TOTAL ANNUAL COST		$64,932,109

ELECTRONICS, METAL DEGREASING, CLEANING SOLVENTS

COLD CLEANING MACHINES	(EST. 5,081)
ANNUAL FEE IMPACT	$4,006
OT VAPOR DEGREASERS	(EST. 10,032)
ANNUAL FEE IMPACT	$6,980
CONV. VAPOR DEGREASERS	(EST. 4,750)
ANNUAL FEE IMPACT	$21,934
DRY CLEANER MACHINES	(EST. 730)
ANNUAL FEE IMPACT	$8,438
TOTAL ANNUAL COST	$200,661,266

STERILIZATION

HOSPITAL STERILIZERS		(EST. 6,000)
ANNUAL FEE IMPACT		$5,082
LARGE FACILITIES	NO.	IMPACT
MEDICAL EQUIP	219	$69,946
CONTRACT STERIL	60	$92,840
PHARMACEUTICAL	93	$27,443
SPICE FUMIGANT	27	$28,846
COMM R & D	12	$43,265
TOTAL ANNUAL COST		$55,230,795

HOUSEHOLD & SMALL REFRIGERATED APPLIANCES

TYPE	INSTALLED	ANNUAL PROD.
REFRIGER.	118,164,000	6,000,000
FREEZERS	39,533,000	1,250,000
ICE MAK(12)	210,176	5,000
ICE MAK(502)	1,418,774	110,000
DEHUMID.	9,907,000	590,000
VEND. MACH.	3,034,000	200,000
WTR COOLER	5,810,000	475,000
REFRIGERATED TRANSPORT. SYSTEMS	345,000	45,000

MOBILE AIR CONDITIONING

ESTIMATED VEHICLES CONTAINING MOBILE AIR CONDITIONING SYSTEM

108,875,000

SERVICE REQUIREMENTS ESTIMATED TO AVERAGE 1 LB/CAR/YEAR

IMPACT ON SERVICE REPAIR SHOPS

ADDITIONAL CARRYING COST FOR MORE EXPENSIVE REFRIGERANT

ADDED COST TO CONSUMER FOR A/C SERVICE

TOTAL ANNUAL COST $218,000,000

WHOLESALERS, AC CONTRACTORS

AVERAGE SIZE WHOLESALER COULD SELL
1 MILLION LBS. OF REFRIGERANT/YEAR

ADDITIONAL CASH FLOW REQUIREMENTS
$2 MILLION/YEAR

COST OF MONEY TO WHOLESALER
@12.5%
$25,000

AIR CONDITIONING CONTRACTOR THAT
PURCHASES 40,000 LBS/YEAR

ADDITIONAL CASH FLOW REQUIREMENTS
$80,000/PER YEAR

COST OF MONEY TO CONTRACTOR
@12.5%
$900

APPROXIMATELY 60,000 SERVICE CONTRACTORS

IMPACT ON PLASTIC FOAM MANUFACTURERS

CFCS REPRESENT 20-40% OF FINISHED PRODUCT COST

INDUSTRY ANALYSIS* SUGGESTS THAT ADDITIONAL COSTS WILL RESULT IN:

SIGNIFICANT ANNUAL REVENUE LOSS
PLANT CLOSURES
JOB LOSSES

IMPACT AT $2.00/LB OF CFC

ANNUAL REVENUE LOSS	> $600 MILLION
CUMULATIVE JOB LOSS	> 6,500 JOBS

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* STUDY COVERED ONLY FOUR REPRESENTATIVE SEGMENTS OF THE PLASTIC FOAM INDUSTRY:

LAMINATED POLYURETHANE BOARDSTOCK
RIGID POLYURETHANE SPRAY FOAM
SUPER SOFT FLEXIBLE SLABSTOCK
ALL OTHER FLEXIBLE SLABSTOCK

THE LOST REVENUE AND LOST EMPLOYMENT FOR THE ENTIRE PLASTIC FOAM INDUSTRY WOULD LIKELY BE MUCH LARGER THAN THE TOTALS FOR THE FOUR SEGMENTS ANALYZED.

TESTIMONY OF
WILLIAM JELIN
ON BEHALF OF THE
ENERGY EFFICIENT INSULATION MANUFACTURERS
BEFORE THE
SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
COMMITTEE ON ENVIRONMENT AND PUBLIC WORKS
UNITED STATES SENATE
MAY 19, 1989

Mr. Chairman and members of the Committee, my name is William Jelin. I am the Founder, President, and Chief Executive Officer of NRG Barriers, Inc. With me today are Dennis Ross, Vice President of Administration and Public Affairs for Jim Walter Corporation and Lorraine Aulisio, Vice President of Technical Services and Regulatory Affairs for The Celotex Corporation, a subsidiary of the Jim Walter Corporation.

We are here on behalf of the Energy Efficient Insulation Manufacturers ("EEIM"). We make rigid insulation board, a product that represents the state of the art in highly efficient insulation for houses and businesses. This is a sample of our product. For the homeowner and the businessperson, our insulation board offers substantially greater energy savings than any other insulation product now on the market. The eight member companies of EEIM manufacture 90 percent of the rigid polyisocyanurate insulation board produced today. CFCs are used in our product for two reasons: (i) the low thermal conductivity of CFCs provide the unsurpassed insulation value associated with our product, and (ii) CFCs helps as a "blowing agent" to physically form the foam. Our process now depends mainly on CFC-11 with minor use of CFC-12. Let me say at the outset that we have always endorsed the Montreal Protocol because we believe international agreements to regulate CFCs are the only effective way to deal with this global problem, and depending on the commercialization of CFC substitutes, we intend to be out of CFC use by 1994.

Mr. Chairman, we are particularly proud of our work because our product saves tremendous amounts of energy and reduces the sizeable environmental costs of producing that energy. Indeed, our industry came into being in the 1970's as a direct response to the first oil crisis which launched our country's drive for energy self-sufficiency. And we have made a major contribution to that struggle. Today, insulations containing CFCs are used in about 60 percent of new commercial construction, 50 percent of new residential construction, and 30 percent of reinsulation of existing buildings. While building insulation products account for less than 1/7 of all uses of CFC-11 and CFC-12, we account for about 1/3 of the energy savings associated with their use.

To be sure, it is the CFCs encapsulated in our insulation that gives it its outstanding energy-saving properties. However, we believe that the energy conservation achieved by rigid insulation board -- and the related reduction of environmental risks in producing energy -- are strong arguments against any policy which would tend to reduce disproportionately our industry's share of CFC use.

To give you another practical perspective on the benefits of our product, let me pose one scenario. Suppose, a fee is imposed today, and it drives us out of the market by the end of this year -- and that over the next several years commercial and residential construction goes forward without our product, using currently available substitutes in its place. According to the Department of Energy's (DOE) own intermediate figures, buildings and houses constructed each year will use over the course of their lives 58.6 million more barrels of oil for heat and air conditioning then they would if our product were used. If no CFC substitute is available until 1994, buildings and houses will be constructed that will use 234 million additional barrels of oil over their life. 234 million additional barrels of oil will be burnt even if CFC substitutes are available for use in insulation products in 1994. That translates into 160 additional Exxon-Valdez like tanker loads delivered to our shores even if substitutes are available by 1994 -- and some of us are lucky enough to be around to develop and introduce them.

Let's look at this from even one more perspective. The millions of barrels of oil that will be used if our product is eliminated and no effective substitute is developed before 1994 will cause a significant increase in the amount of harmful greenhouse gases that are emitted, contributing to global warming and acid rain. 234 million barrels of oil would generate an additional 108 million tons of carbon dioxide over the life of the houses and buildings constructed with currently available insulation products.

Furthermore, the currently available insulation alternatives simply don't hold a candle to the energy efficiency and savings associated with our product. Rigid laminated polyiso insulation boardstock has an R-value of 7.2 per inch at 75° mean temperature. R-value means resistance to heat flow. The higher the R-value, the better the insulation value. This is nearly twice the R-value per inch of expanded polystyrene (3.9 per inch) and almost 60% higher than the fiberglass blankets or batts (3.6 per inch).

As I noted earlier, we have always endorsed the Montreal Protocol and depending on the commercialization of CFC substitutes, we intend to be out of CFC use by 1994. We intend to meet this optimistic deadline by vigorously working with our suppliers to develop safe, effective, and commercially sensible substitutes for the CFCs that we now use in our product. The rigid insulation board manufacturers collectively have spent millions of dollars on this matter. In addition our trade association, PIMA (Polyisocyanurate Insulation Manufacturers Association) and SPI (The Society of the Plastic Industry) entered into a joint DOE/EPA program to evaluate insulations made with HCFC-123 and HCFC-141b. This program, jointly funded by industry and government, and is underway at Oak Ridge National

Laboratory. We have been encouraged by our progress in this effort. We are confident of success in this endeavor. Given the tremendous environmental and energy benefits of our product, we believe that care must be taken by the U.S. Government, as it manages the phase-out of CFCs, not to inadvertently destroy our industry.

I must report, however, a very serious footnote to the commitment to find safe and effective substitutes. EPA Administrator Reilly has acknowledged that there is a movement, both in this country and in Europe, to regulate and possibly phase-out over time the use of the replacement products currently being studied for our use. This is based upon the fact that these products have some, however, small, ozone depleting potential. Recently, two major chemical manufacturers announced their intention to halt further development efforts related to these replacement chemicals until the uncertainty over the regulation of these chemicals is resolved. I urge this Committee and EPA to act decisively to clarify this situation immediately, or else the chemical manufacturers simply will not make the capital expenditures necessary to supply a substitute for CFCs.

There is a second equally threatening problem. Much of the legislation before the Committee and a rulemaking proposal before EPA see the use of CFCs as a deficit-reduction opportunity to raise revenue. Though they take different approaches, all these measures have the potential to drastically raise the price of CFCs and so deliver a fatal economic blow to our industry.

Our alarm here is based on a fact of economic life that uniquely applies to producers of rigid insulation board as opposed to other industries using CFCs. Unlike those other industries, CFCs account for a substantial portion--approximately 15 percent--of the production costs of our product. People will still buy cars and refrigerators even if there is a significant rise in the price of CFCs, because CFCs are a very small part of the cost of such products. Thus, a rise in the price of CFCs will have a negligible impact on the overall price of these goods.

The same cannot be said for our industry. Because CFCs are such a major component of our insulation, our market is extremely sensitive to the price of CFCs. Indeed, our market is so delicate that we will no longer exist if our CFC costs rise significantly during the interim period while alternatives to CFCs are being brought on line. Less costly and less energy efficient insulation will be purchased, and the environmental benefits of rigid insulation board will be lost.

We recognize that diminishing supplies of CFCs will cause a natural rise in the price of CFCs. We've begun to experience significant increases already. However, we believe that, during this interim period before we find a feasible CFC substitute, we can survive the kind of price increases that we can anticipate from the normal market response to declining CFC supply. Yet, quite candidly, if our government's policies deliberately exacerbate our delicate price situation by trying to convert the environmental challenge of phasing out CFC use into a deficit reduction opportunity, we simply cannot survive. In our view, by driving our product off the market before a CFC substitute is found, the environmental and energy benefits of our insulation are lost, and, while some revenues may be raised in the short term, in the long run our country ends up a net loser in energy conservation and environmental protection.

This Committee should refocus its attention on the real mission -- how this country will meet its obligation under the Montreal Protocols and beyond to protect the ozone layer -- and do so through sound, efficient energy and environmental policy. It is our goal to ensure you have all the facts, and to work with you to achieve this end.

Foam Insulation Board - the Contribution to Energy Conservation and Implementation of the Montreal Protocols

In the early 1970's this country was shocked into reality by the Arab oil embargo, and began to take steps to secure our independence from foreign oil. As I have said, the creation of our industry in the 1970's was in direct response to our national drive for energy self-sufficiency. Over the last 15 years, rigid insulation board has rapidly increased its share of the building insulation market as a result of rising energy prices, high insulating value per inch, and its attractive characteristics as a building material (in particular, its ease of installation, stability and rigidity).

And with its growing market share, the rigid insulation board industry has made a great contribution to this nation's energy conservation goals. Recall the 234 million barrels of oil that I showed you. In addition, the Department of Energy, has cautioned that the impact of CFC restrictions on U.S. energy consumption may result in an "alarming reversal of recent successes in energy conservation." Under their intermediate assumptions, the Department of Energy estimated that CFC restrictions would in the long run result in an increase in national energy use of 1,000 trillion BTU per year. The largest energy penalties occur within the equipment and building insulation product categories, representing "1.5 to 9% of the energy use in the residential and commercial sectors at a time when additional conservation is desired. A major portion of the impacts result from changes in appliance and building insulation." According to Department of Energy data, the energy penalty per pound of CFC reduction is three times higher for building insulation than for other uses.

The Environmental Protection Agency has acknowledged that CFC restrictions in our industry will have adverse affects on U.S. energy consumption. As EPA put it, "In some special building construction designs and industrial uses, substitutes may not be able to match the insulating capacity available with rigid PU foam due to space limitations. In such cases, increased energy costs will result." This chart graphically demonstrates what EPA is talking about. As you can see, rigid polyiso insulation board has an R value of 7.2 per inch, which is significantly higher than any non-CFC insulating material. For comparison purposes, rigid boardstocks' insulating capacity is higher than any non-CFC insulation material. For comparison purposes, in residential construction, our product replaced fiberboard sheathing. Fiberboard sheathing is sold in 1/2 inch thickness and has a R-value of 1.3. One half inch of our product has an R-value of 3.6, more than twice the R-value of fiberboard. Put another way, a builder would have to use 2 1/2 inches of fiberboard to equal the R-value of our product. As EPA has noted, even if that homeowner or builder wanted to use a thicker piece of non-CFC insulation, space limitations will in some instances preclude such an option. Corresponding to the sizeable contribution toward energy conservation made by rigid insulation board are its significant environmental benefits. The millions of barrels of oil and other fossil energy that is saved as a result of our product is an undeniable environmental plus.

Reducing the need to burn such fuels for energy cuts down on the amount of harmful greenhouse gases that fossil fuels emit, contributing to global warming and the greenhouse effect.

An often overlooked environmental benefit of rigid insulation board is associated with the recycling of plastic waste in its manufacturing. Currently more than 50% of all rigid polyiso insulation board uses raw materials which have been derived from waste plastic bottles, x-ray and lithographic film. This use removes 20-30 million pounds of waste plastic annually from the solid waste stream and converts it to energy-efficient insulation. Further, our product represents the largest single use of colored plastic bottle scrap, the most difficult to recycle.

Finally, of all CFC uses, production and use of our product does the least damage to the stratosphere. Only 2 1/2 percent of the CFCs are lost during the production of rigid insulation board. Moreover, the CFCs which are bound up in insulation board are released into the atmosphere at a very slow rate. EPA has found that it takes about one hundred years for half of the CFCs associated with a piece of this insulation to be released to the atmosphere. Compare this to solvents or flexible foams. EPA estimates that these products emit close to 100 percent of their CFCs into the atmosphere within one year.

There is greater potential for environmental damage when CFCs are emitted into the stratosphere over a short period of time versus a slow rate of release over a longer time frame. According to EPA estimates, potential health and property damage caused by additional CFC accumulation in the stratosphere does not increase along a straight line. In other words, two pounds of CFC accumulation cause more than twice the damage of one additional pound. A release of large volumes of CFCs over a short period of time, such as from solvents or flexible foam, will have a much more significant environmental impact than the slow release of CFCs from our rigid foam insulation.

Threatened Destruction of the Industry

The energy and environmental benefits of rigid insulation board are not the only qualities that distinguish this product from other uses of CFCs. We are one of the most price sensitive CFC users. While we can bear some natural market rise in the price of CFCs resulting from its growing scarcity, we will not be able to pass on a significant rise in costs to consumers. They will simply choose less costly alternatives regardless of our product's superior energy efficiency. As Professor Jerry A. Hausman of MIT has concluded, consumers fail to take future energy costs fully into account when making decisions about the energy efficiency of equipment purchases, and thus under-invest in energy savings products.

With all due respect to Professor Hausman, I did not have to go to MIT to reach the same conclusion for our industry. I know how competitive the insulation market is, I know how the consumer thinks, and I know I am in trouble if I am forced to raise the price of my product regardless of how energy efficient we know it is. Remember, the products which our insulation board replaced typically had an R values significantly less than our 7.2 per inch!

EPA's regulatory analysis and a study conducted by Putnam, Hayes and Bartlett both attest to the delicate market we face in concluding that my industry will bear a disproportionate share of the economic burden associated with CFC restrictions. As EPA noted in its rulemaking of August 12, 1988, "[S]hort term CFC price jumps, if they occur, would have a significant impact on the competitiveness of the rigid foam insulation market." Well, let me tell EPA that the price jumps have already begun to occur and my industry is beginning to bleed.

We believe, however, that, during this interim period before we find a feasible CFC substitute, we can survive the kind of price increases that we can anticipate from the normal market response to declining CFC supply. Yet, quite candidly, if our government's policies deliberately exacerbate our delicate price situation by trying to convert the environmental challenge of CFC use into a deficit reduction opportunity, we simply cannot survive. Regrettably, the government's revenue raising "solutions" promised to do just that. For, if a user fee or tax is not set at exactly the right level, the market distortion will bring about our demise.

With all due respect to you, the Members of Congress and the committed public servants who toil at EPA, it is not possible to have sufficient information to determine as precisely as would be necessary the appropriate amount of the fee or tax. Simply put, the market is just too dynamic. If these proposals become law without additional help for our industry, we will not simply bleed, we will hemorrhage and die. In our view, by driving our product off the market before a CFC substitute can be found, the environmental and energy benefits of our insulation are lost, and, while some revenues may be raised in the short term, our country ends up a net loser in the long run.

We have submitted extensive comments to EPA on the various options and will include those comments for the record. Let me say in all candor, it is unfortunate and highly unusual that the proposed solutions to such a serious environmental issue as ozone depletion, appear to be driven by revenue raising/deficit concerns rather than sound environmental management. In our comments to EPA, we suggested other approaches: using EPA's allocated quota along with traditional command and control regulations, or alternatively, employing positive incentives and rewards to encourage both the use of alternatives where they exist, and the research necessary to discover safe and effective alternatives where there presently are none. More than any revenue-oriented scheme, the alternatives that we have suggested will effectively further our nation's energy goals while protecting the environment.

As far as I'm aware, the U.S. is the only signatory to the Montreal Protocol that is traveling the path that we appear to be taking. I implore this Committee and EPA not sacrifice sound environmental management and energy conservation goals that should be associated with CFC reductions in our attempts to reduce this nation's deficit.

When EPA Administrator Reilly testified before this Committee last March, he made three important points. First, that in our effort to eliminate the production of CFCs we do not create other environmental problems. Second, in reducing our dependence on CFCs we must insure that new technologies do not result in decreased energy efficiency. And finally "we must be sure that our actions effectively respond to the threat of ozone depletion." The Energy Efficient Insulation Manufacturers wholeheartedly agree with Administrator Reilly and urge Congress and the Administration to recognize the importance of our industry's continued existence in helping to meet Administrator Reilly's objectives.

It is our hope that this Committee will refocus its attention on the real mission -- how this country will meet its obligation under the Montreal Protocols and beyond to protect the ozone layer -- and do so through sound, efficient energy and environmental policies. It is our goal to ensure you have all the facts, and to work with you to achieve this end.

We would be happy to answer any questions the Committee may have.

STATEMENT OF
MARILYN I. MONTGOMERY
ON BEHALF OF ALLIED-SIGNAL INC.
BEFORE THE
SENATE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
MAY 19, 1989

Mr. Chairman, my name is Marilyn Montgomery. I am Vice President and General Manager of Allied-Signal's Genetron business unit. On behalf of Allied-Signal, I appreciate the opportunity to be back before you, Senator Chafee and other Members of the Subcommittee who have been interested in the challenge of maintaining our global environment for so long.

The Genetron Business unit is part of the Fluorine Products Division of Allied-Signal. We manufacture and market a broad range of chlorofluorocarbons, including CFC-11, 12, 113, and 114 at domestic manufacturing facilities located at Baton Rouge, Louisiana; Danville, Illinois and El Segundo, California. We also manufacture Refrigerant 22. We manufacture solvent cleaning equipment systems through our Baron-Blakeslee unit.

Since my last appearance here, new information has come out of the arctic environmental assessment that only confirms that we must continue the global effort to phase out of the products controlled by the Protocol. As I'm sure you know, we have called for virtual elimination of these products by the turn of the century. The Montreal Protocol should be amended for this purpose.

In my testimony today, I want to cover our progress in developing substitutes, briefly discuss regulating the HCFCs, and Allied-Signal's concern about some of the legislation that has recently been introduced.

Before addressing these points, however, I want to highlight two issues that have been discussed with this Subcommittee before, but need to be reiterated.

The first point I want to make is that the producers are only a piece of this complex puzzle. CFCs are used in a wide variety of ways. I have seen estimates that CFCs play a role in some 5,000 individual businesses across the U.S. We can't forget that we are asking these businesses to change, very rapidly, from products they are familiar with and understand to ones that aren't even on the market yet. The pressure on these people is enormous and some of the suggestions of accelerating the Protocol deadlines in the U.S. do not reflect an appreciation of the transition period needed by the users. We are confident about our ability to produce substitutes and we appreciate the support that we have received from you, Mr. Chairman, and other Members of the Subcommittee. However, that enthusiasm must be tempered with an appreciation that our role is only a piece, albeit, a big piece, in a large and complex puzzle.

The other point that I want to reiterate is that CFCs are used in many applications that are truly critical to society. CFCs were invented 50 years ago because existing refrigerants and solvents had health and safety dangers associated with their use. It's important that policy makers, who play such a critical role in phasing out the controlled products and phasing in the new ones, appreciate that there are some very important uses for CFCs for which we simply have to find substitutes.

Briefly, 75% of our food supply depends on CFCs refrigerants at some point in the production and distribution chain. CFCs sterilize surgical equipment, cool X-ray rooms and refrigerate blood, medicines, donated organs and propel asthma relief sprays. They are used to clean our most delicate electronic equipment. In addition, they provide efficient insulation in homes, appliances, and the railway cars and trucks that transport our food supply around the country. I consider, as I'm sure you do, these to be very important societal benefits that accrue in part because of CFCs. We have to be very careful that legislative proposals and other regulatory initiatives don't disrupt the transition to the substitutes in such a way that we leave such important needs unmet.

With regard to the substitutes, we are continuing to make progress. We have increased our staff of scientists dedicated to fluorocarbon development again. Our most recent staff expansion increased the size of the team by 75% and we expect a further increase in the near future.

We have already seen results from these resource commitments. Allied-Signal received a patent on a promising family of lubricants. New lubricants are needed in air conditioners and refrigeration compressors in order for the substitutes to perform. By this summer we will start operation of our second pilot plant producing substitute products at our fluorocarbon research center in Buffalo, New York. The two primary purposes of a pilot plant are to develop a manufacturing process as well as to provide even larger quantities of the new products to customers for their evaluation and development of end use systems. We have already provided numerous samples of the promising substitutes to all the major user segments. These include 134A, 123, 124, 141(B) and a number of blends. Also, our Baron-Blakeslee unit has introduced new equipment designed to limit the emission of CFC-113 to the atmosphere during cleaning operations. We have established centers near Silicon Valley, California and Chicago, Illinois to take back spent or contaminated CFC 113 solvent for recycling and reuse. We have developed a new family of solvents based on HCFC 141(B) which could ultimately replace about 1/2 of the 165M lbs. of CFC 113 used in the United States today. This would eliminate some 90% of the ozone depletion caused by the CFC 113 replaced. The new cleaning equipment introduced by Baron Blakeslee will use the substitute on a drop-in basis.

In April, we announced the development of a drop-in substitute for the 30M lbs. of CFC-12 that is currently used in a blend with ethylene oxide to sterilize surgical and health care equipment. Successful tests have been conducted on this new product at Duke University Medical Center. Further testing is necessary but we are confident that this is a breakthrough.

While all of this promising research into new products and ways to promote conservation is occurring there are also two key testing programs underway that I have not yet mentioned. One of our primary goals is to make certain that the substitutes are safe. In order to do this, Allied-Signal has joined with several other producers to undertake programs for alternative fluorocarbon toxicity testing (PAFT I+II). PAFT I+II are focused on determining a toxicological profile for three of the key substitute products HCFCs 123, HFC 134(A) and HCFC 141(B). These organizations were formed to expedite the toxicological testing of possible substitute fluorocarbons. We want to make certain that we are not exchanging one set of problems for another.

The other important testing program underway is the alternative environmental acceptability study (AFEAS). As with the PAFT groups, this one is also a cooperative effort of the major worldwide CFC producers. This study will examine all of the key substitutes for their:

- Potential to affect stratospheric ozone
- Potential to affect tropospheric ozone
- Potential to contribute to global warming
- Degradation mechanism
- Potential environmental effects from the decomposition of the compounds.

Answers to these questions are important to us, and to you, and we expect this information to be enormously useful to our understanding of atmospheric science.

I have only highlighted for you and the Committee some of the steps that we are taking at Allied-Signal. The real story is even larger.

This larger story involves many groups of people. It involves the family that has bought a refrigerator recently and expects it to last for 20 years although its efficient operation depends on a product to be phased-out of production. It involves the manufacturer of that unit who is concerned abnout servicing it over time but also is developing new systems for using the substitute products. It involves the American electronics industry which is fighting to maintain its competitive position, but which faces the need to change the way it cleans its microcircuitry. It involves hospitals which use the controlled products in systems to safely and effectively sterilize medical and surgical equipment. And, it involves our building industry which utilizes CFCs to make insulation that brings energy efficiency to our homes.

At Allied-Signal we feel that we are in partnership with each of these groups. This partnership is extraordinary, as it should be, given the monumental task that we all face. This partnership between producer and user is critical because without it we run the risk that substitutes will be available but systems to use them will not be.

Assuming we have the substitutes available in the time frame we predict and users have systems to operate with them, we will have some transition period to convert over from the controlled products. This transition will not take place overnight. Work will continue between producer and user to insure wide acceptability of the substitutes. This only addresses the challenge presented by the new applications. We cannot lose sight of the fact that we still will be challenged to find a way to address the needs of the billions of dollars of installed equipment which will continue to be in use in the 1990's and for which it is unlikely that there will be drop-in substitutes. We are working on this challenge as well.

Mr. Chairman, I think I have illustrated that it is not business as usual at Allied-Signal. We expect to spend over $250M to bring the new products to market. We are on a very tight time schedule: and, we are committed to it. I want to assure you and the Committee, however, that we will not cut corners where the safety of our workers and the safety of the public is concerned. We will not commercialize a product just to be the first one to market. CFCs are used in many different ways and we will understand the safety of these products in all potential uses and applications before we recommend their usage. For instance, CFC-11 is a key component in the rigid board insulation that is in the walls of many of the houses being built in the U.S. today. From an energy/cost efficiency standpoint, it's the best product for this purpose on the market. Allied-Signal and other producers are working on substitutes to be used in this application. We are in a hurry to do this, but we will not be rushed to the point that we put a product in the walls of homes that would expose homeowners to health risks or risks from fire.

As I said earlier, Allied-Signal supports re-opening the Protocol for achieving further global reductions. These reductions, however, should not be mandated at the front end of the process. Producers, users and consumers need to have some transition period. Our substitutes must be safe, the systems for using them must be developed, and servicing of existing equipment must be maintained for a period of time. At one point during the Protocol negotiations, the U.S. position was for deeper global reduction in the production and use of the controlled CFCs, provided there were safe substitutes available, by the turn of the century. We believe that this position is still valid and would urge the U.S. to continue trying to have other Protocol parties adopt it.

At this point rather than respond to each individual question in your invitation to testify here today and to the issues raised in each bill before the Committee, let me deal with them in groups. First I will address the economic issues, then issues associated with accelerating the Protocol, and lastly the need to regulate substitutes.

On the economic side, the price of CFCs has risen since last year in the U.S., which was the expected result of the EPA guidelines. At Allied-Signal we take a long-term view of this business. We are not going to price our customers out of the market when we are counting on them to use the substitutes as they become available. The economic theory embodied in the EPA rule that increased prices would provide incentive for conservation and substitutes appears to be working.

Some have expressed concern that producers will reap windfall profits because of the Montreal protocol and see such profits as a source of revenue raising. After a long period of CFC price deterioration, prices have increased over the last 6-8 months. But the real question is whether or not strong market conditions can be sustained over any period of time. User momentum to eliminate or drastically reduce chlorofluorcarbon requirements may well reduce oeverall demand significantly in the not too distant future. That is a successful scenario from an environmental policy perspective, but it does not lead to producers reaping windfall gains. It is indeed equally reasonable to project in the near future a period of serious economic hardship for producers, particularly those devoting significant resources towards developing new substitutes, prematurely obsoleting entire plant systmes, and assisting users through this difficult transition.

As we understand it, three mechanisms have been suggested to recoup this so-called "windfall" for the treasury. The first method suggested is an auction of the production rights. We find this totally impractical. It creates chaos in the marketplace. It destroys our ability to plan and allocate capital to this business. It will also reduce the incentive to conserve. Likewise, the users, particularly small users, would be unable to do any type of planning if an auction were to take place. We are entering a transition period that is sufficiently disruptive by itself.

With regard to a fee, we feel that similar objections are valid. The Montreal protocol and EPA regulations set up a process that encourages the introduction of substitutes. However, production of the substitutes is left up to others. I do not see how a fee mechanism helps to develop substitutes. The fees in the bills that I have seen are not trivial. In some instances, the fees are 100% or more of the current price of CFCs. That fee falls heaviest on users at a time when users require capital and research to develop processes and products that utilize the new substitutes. A fee would raise their costs and reduce their resources. It also will increase the cost of their product vis-a-vis foreign competition. This hardly seems to be in our country's interest.

The last mechanism suggested, the so-called "Wind Fall Profits Tax". Suffers from the same disadvantages: It takes for the government resources that are needed to solve a major problem and to restructure a major industry. As I mentioned earlier, it is equally likely that producers will in the future be facing economic hardship as opposed to strong market conditions.

The switch to the new products cannot happen overnight. None of the economic penalties you have under consideration assist in this changeover. What's needed is scientific, health, and safety information about the substitutes. Unfortunately, this takes time.

The federal deficit is a very large problem for the nation, but the problem posed by phasing out the controlled products and into the new ones is also very complex. Transition to the substitutes will occur as a result of carefully thought out and well reasoned policy decisions based on sound scientific data rather than levying economic penalties on users and producers.

With regard to suggestions for accelerating the Protocol, our position is that the Protocol should be amended to virtually eliminate the controlled products by the year 2000 all over the world. The steps to that end should reflect the latest scientific data.

We see no need to accelerate the protocol unilaterally in the U.S. Neither scientific evidence nor economic reality support this approach. In Helsinki our EPA presented a very thorough analysis of the issues related to reducing atmospheric chlorine to acceptable levels. The presentation clearly showed that obtaining universal adoption of the protocol, as well as bringing two other chemicals into the controlled group would accomplish much more than accelerating it, as long as the year 2000 was the end of the phase out period. In fact, speeding up the Protocol internationally will have almost no effect on the eventual chlorine levels in the atmosphere, so speeding it up in the U.S. where only 30% of the world CFC's are produced and used has even less effect. In addition, accelerating this program in the U.S. could deprive some critical user segments of the time needed to transition to the substitutes.

Finally, I wish to comment on the discussions of controlling some of the substitutes. These substitutes, HCFCs, contain very small amounts of chlorine in dramatic comparison to the products they will be replacing. Their utilization reduces ozone depletion because of their chemical makeup, their relatively short lifetime and their ability to break down before reaching the upper atmosphere. Part of the solution to ozone depletion is the availability of HCFCs.

Talk of controlling these substitutes will lead to slowing their introduction and utilization. Our users don't necessarily read bills introduced in the congress but they do read trade journals and newspapers and have gotten very concerned what they have recently read in this regard.

Customers have been working closely with our technical people to design equipment and understand all the properties of these molecules so they can use them when they become commercially available. However, now users and producers see the spectre of regulation of these chemicals and suddenly what they thought would be a solution has become a potential problem. Quite frankly, the discussions of regulating the replacements has placed a chill on the marketplace.

Regulating HCFCs now is not needed. In fact, what is needed is encouragement to commercialize the safe substitutes so that the critical needs can be met in a timely and responsible manner. Talk of further regulation provides discouragement.

The cloud of uncertainty that has been placed above the heads of the substitutes should somehow be removed so that the momentum we have been building will continue.

In summary, Mr. Chairman, I hope I have demonstrated to the Committee Allied-Signal's commitment to producing environmentally safe CFC alternatives and working with our partners on the development of systems to use them. We are in a very competitive race on a global playing field. If all the toxicological data turns out as we hope it does, and we can continue the progress we have made on process technology and system development, we will have substitutes in the marketplace in time for the next reduction mandated by the Protocol. We are committed to meeting the challenge. We look forward to working with you and other in the congress to help make this commitment a reality. It will be pleased to answer any questions you may have.

United States General Accounting Office

GAO

Testimony

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EPA's Safety Assessment of Substitutes for Ozone-Depleting Chemicals and Legal Issues Relating to CFC and Halon Production Rights

Statement for the Record
Richard L. Hembra, Director
Environmental Protection Issues
Resources, Community, and Economic Development
Division

Before the
Subcommittee on Environmental Protection
Committee on Environment and Public Works
United States Senate

Mr. Chairman and Members of the Subcommittee, we appreciate the opportunity to present our views on EPA's safety assessment of substitutes for chlorofluorocarbons (CFCs) and other ozone depleting chemicals. Our February 1989 report[1] is the basis for our statement, as is follow-up work done since the report was issued. In addition, our Office of the General Counsel also examined EPA's authority to use certain economic measures to capture windfall profits that might be created by the required limits on CFC production.

In brief:

-- We recommended in our report that EPA fully use its authority under the Toxic Substances Control Act (TSCA) to assess the safety and environmental effects of chemicals that are now being developed as substitutes for CFCs and halons, the major ozone-depleting chemicals. These chemicals are now used in homes, businesses, and industry in a wide number of applications. The safety of substitute chemicals is therefore an issue that affects millions of users, as well as our environment. (Attachment I contains detailed information on our report findings and followup).

-- EPA has published a solicitation for comments on the potential use of economic measures, such as a fee or auction system, to capture windfall profits. Our Office of the General Counsel has identified some key issues EPA must face to successfully implement these measures, such as whether such measures would be viewed as user fees, regulatory fees, or taxes, and whether EPA is authorized to implement them under current law. It would be highly speculative to conclude whether EPA is authorized under current law to use such measures before EPA makes a specific proposal and articulates the legal and other support for it. Further, because current court precedents do not definitively address some of these issues, EPA's implementation of either measure is likely to result in litigation. In this regard, if EPA replaces the allocation system with an auction system subsequently voided by the courts, compliance with the Montreal Protocol could be affected. These uncertainties suggest to us that legislative action would be a more appropriate course to follow in addressing whether and what kind of economic measures should be established to capture windfall profits. A number of bills have been introduced during this Congress to impose economic measures on the production of CFCs and halons. (Attachment II contains a detailed discussion of these issues).

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[1] Stratospheric Ozone: EPA's Safety Assessment of Substitutes for Ozone-Depleting Chemicals (GAO/RCED-89-49, Feb. 13, 1989).

SUMMARY OF REPORT FINDINGS AND RECENT DEVELOPMENTS

Let me return to our findings on EPA's safety assessment of CFC and halon substitutes. The need for CFC and halon substitutes is present and growing. Beginning in July, the Montreal Protocol--an international agreement--will set in motion a 10-year time frame for signatory countries to cut their CFC production levels by as much as 50 percent of 1986 levels. Halon production is to be frozen in 1992 at 1986 levels. While these cuts are being initiated, participating countries, including the United States, are actively considering an acceleration of the reduction schedule. Just over 2 weeks ago, representatives from approximately 80 nations met in Helsinki, Finland, to discuss the latest scientific knowledge regarding ozone depletion. The participants issued a nonbinding, draft declaration that CFCs regulated by the Protocol should be phased out no later than the year 2000, that halons should be phased out as soon as possible, and that other ozone-depleting chemicals should be controlled as soon as feasible. On April 17, 1989, EPA issued an Advance Notice of Proposed Rulemaking to request public comment on the possible regulation of two ozone-depleting chemicals not covered by the Protocol--methyl chloroform and carbon tetrachloride.

As the Montreal Protocol participants work toward a revision of their goals for production and consumption of ozone-depleting chemicals, the availability of safe substitutes for these chemicals becomes even more important. Some users have already been able to move away from the regulated CFCs. But for other industrial applications, substitute chemicals or products are either not yet available or not as effective.

In response to this need, chemical producers around the world are working to develop CFC substitutes. Part of the development process involves testing potential substitutes to determine whether they could have adverse effects on human health. According to EPA evaluations, the existing toxicity data on alternative fluorocarbons is still incomplete. EPA's evaluations also noted concerns about potential adverse health effects that were suggested by both the available tests and other analyses of the chemicals.

Although the chemical producers are testing CFC alternatives both individually and as part of two international joint testing programs, EPA still has statutory responsibilities under TSCA to ensure that CFC and halon substitutes do not present unreasonable risks to human health and the environment. In November 1988, EPA outlined an approach for assessing the safety of most potential chemical substitutes, i.e., both "new" and "existing" chemicals. "Existing" chemicals are those that are listed on the TSCA Chemical Substance Inventory, and can be commercially produced by anyone, in any amount, and for any use without prior notification to EPA or an EPA safety review. "New" chemicals are those not listed on the Chemical Substance Inventory.

EPA's approach for assessing new chemicals as potential CFC substitutes is to identify and assess them through the normal premanufacture notification process required under section 5 of TSCA. We believe that EPA's approach for new chemical substitutes should be adequate.

EPA's approach for reviewing existing chemicals that may be used as substitutes is still evolving. Reviewing the information contained in producers' health and safety studies is an essential first step in EPA's assessment of CFC and halon substitute safety. However, EPA's November 1988 approach called for only an internal assessment of published health and safety data. As a result of our February, 1989 recommendations, EPA decided to add to its assessment approach the use of TSCA section 8(d) authority which will require producers to provide the agency in an ongoing fashion their unpublished health and safety studies on potential CFC and halon substitutes. These data will help EPA decide whether further testing is needed to determine the safety of chemical substitutes and whether control measures on their use are needed to protect human health and the environment. EPA also intends to use section 8(a) of TSCA to gather data on current and projected production of potential substitutes and their likely uses and human exposure levels. This information will also help EPA assess the risks associated with potential substitutes. According to EPA, it will take about 1 year to obtain data under these authorities.

In the meantime, EPA plans to use its authority under section 114 of the Clean Air Act to quickly obtain similar data from a limited number of producers for a variety of potential substitutes. EPA anticipates receiving this data within 6 to 8 weeks. A previous EPA attempt to gather testing data through section 114 has not been fully successful, however, since two out of the seven domestic CFC and halon producers have not furnished requested information, despite repeated follow-up. Since CFC substitutes will take years to develop, the use of TSCA section 8(d) for data gathering is the most appropriate way for ensuring that EPA is provided with health and safety data on a timely, routine basis over the coming years. EPA should review this data as part of its assessment of the safety of these chemical substitutes to determine if additional testing or controls are required.

While EPA's approach for assessing existing chemicals as potential CFC substitutes has been improved, more needs to be done. Our February report also recommended that EPA use its TSCA section 5(a)(2) authority to require producers to provide advance notification of intended significant new uses of existing chemicals as substitutes for CFCs. This authority enables EPA to review the safety of significant new uses of existing chemicals and quickly control those that pose an unreasonable risk to human health and the environment. The agency is still considering whether and how to make full use of its TSCA section 5(a)(2) authority. Our follow-up work disclosed that EPA is considering issues such as what chemicals might be included in framing a significant new use rule for CFC substitutes and what triggers might be used to cause the rule to come into play. For example, the rule might specify that certain named chemicals must come under review if their production volume exceeds a stated level. Until EPA takes advantage of its section 5(a)(2) authority, the cause of our concern continues to be an issue: most of the potential substitutes identified so far can be produced by anyone, in any amount, and for any use, without prior notification to EPA or an EPA safety review.

Mr. Chairman, we recognize the need to eliminate the use of chemicals that deplete stratospheric ozone, and like EPA, we believe that CFC and halon substitutes must be safe and not pose unreasonable risks to human health and the environment. In our view, the urgency associated with quickly developing substitutes to offset the phaseout of existing ozone-depleting CFCs and halons requires effective EPA oversight in order to protect public health and the environment.

We commend EPA's announcement of its intent to act on our recommendation to use its TSCA section 8(d) authority and its intention to use section 8(a). We urge the agency to follow through with its decision as quickly as possible. However, we remain concerned that EPA may not make expeditious use of its section 5(a)(2) authority. For this reason, we continue to urge the EPA Administrator to use his authority under TSCA section 5(a)(2) to promulgate "significant new use" rules. These rules would require chemical producers to notify EPA before existing chemicals are produced for significant new uses as CFC and halon substitutes, and they would enable EPA to review the safety of these uses and quickly control those that pose an unreasonable risk to human health and the environment.

GAO'S FINDINGS ON EPA'S SAFETY ASSESSMENT OF SUBSTITUTES FOR OZONE-DEPLETING CHEMICALS

THE NEED FOR CFC SUBSTITUTES

The need for chlorofluorocarbon (CFC) and halon substitutes is present and growing. Even the initial phase of the Montreal Protocol that calls for a production "freeze" at 1986 levels will result in CFC cutbacks because current production levels are already several percentage points higher than 1986 levels.[1] And, as recently as 2 weeks ago in Helsinki, Finland, the United States and approximately 80 other countries issued a nonbinding draft declaration that CFCs regulated by the Protocol should be phased out no later than the year 2000, that halons should be phased out as soon as possible, and that other ozone-depleting chemicals should be controlled as soon as feasible. On April 17, 1989, EPA issued an Advance Notice of Proposed Rulemaking that requested public comment on the possible regulation of two ozone-depleting chemicals not covered by the Protocol--methyl chloroform and carbon tetrachloride.

The effect of CFC regulations on industry depends not only on the pace of CFC reductions, but also on the speed with which substitutes can be developed and commercialized. Some users have already found the means to move away from the regulated CFCs. For example, the Foodservice & Packaging Institute, Inc., recently announced that its members have discontinued using CFC-12 to announced that its members have discontinued using CFC-12 to produce disposable food service products. This is possible because HCFC-22, which has only 5 percent of the capacity to deplete the ozone as CFCs-12, is a commercially available substitute. For other industrial applications, however, substitute chemicals or products are either not yet available or not as effective. For example, there are no fire extinguishing substances that have the useful properties of halon, and commercially available alternative insulating materials are not as energy efficient as CFC-blown rigid foam.

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[1] The exact percentage, based on reports by producers to EPA, is protected as confidential business information. The International Trade Commission, however, reported that U.S. production of CFC-11 and CFC-12 grew from 1986 to 1987 by 11.0 and 14.3 percent, respectively.

Several producers of CFCs have announced stepped-up research efforts to develop chemical substitutes. Du Pont announced in July and September 1988 that it plans commercial production in Michigan and Texas of three alternatives to regulated CFCs. The alternatives are HFC-134a, HCFC-141b, and HCFC-142b, which have applications in refrigeration, air conditioning, and foam blowing. Du Pont also has a pilot plant in New Jersey for producing developmental quantities of HCFC-123. Du Pont reports that it spent more than $30 million in 1988 on CFC alternatives research and production. ICI, headquartered in Great Britain, is spending approximately $83 million (50 million pounds sterling) in search of benign CFC substitutes and has two pilot plants producing test quantities of alternative chemicals. And, in November 1988, ICI announced plans to spend about $50 million on a plant in the United States for the commercial production of HCFC-134a by 1992. Allied-Signal of the United States has reported that it will spend over $250 million on CFC research over the next 10 years. In March 1988, Allied-Signal joined with Atochem, Europe's largest CFC producer, in an effort to develop CFC substitutes. Each firm has pilot plants, and Allied Signal reports that it has made the potential substitutes HCFC-123, HCFC-141b, and HFC-134a available to end-users for testing and evaluation.

TESTING OF SUBSTITUTES

But even with increased research, substitutes may be several years away from commercialization. Producers must not only identify and synthesize potential substitutes, but also subject them to tests to determine their performance capabilities in the particular applications for which they may be used. Most importantly, producers are putting substitutes through lengthy toxicological testing to assess their effects on human health and the environment.

These toxicity evaluations, which can take several years to complete, are a key step in the development of CFC or halon substitutes since many applications using CFCs and halons require low toxicity. A toxicity evaluation begins with a literature search to identify data already available on the toxicity of the chemical in question. The chemical's structure and various technical properties are ascertained, and an estimate is made of human exposure conditions. Then three tiers of toxicological testing are performed:

-- Tier one focuses on the acute effects of exposure to the chemical through inhalation, ingestion, or skin contact.

-- Tier two tests for subchronic effects, providing data on genetic, systemic, carcinogenic, and developmental effects that may result from repeated exposure to the chemical.

-- Tier three is concerned with the effects of chronic (lifetime) exposure. Carcinogenic potential is investigated, along with multigeneration reproductive toxicity. Special tests, such as cardiac sensitization, neurotoxicity, and environmental impacts, would also be done at this time.

Tier one and tier two testing are generally done early in the development process and can be completed within a year. Tier three tests can take from 3 to 4 years to complete.

After the testing is finished, the results are analyzed to determine the exposure conditions under which the chemical can be used safely. Based on these results, along with an assessment of other factors, such as production costs and potential markets, the producer makes a "go/no go" decision on whether to proceed with commercializing the chemical.

EPA'S ROLE REGARDING SAFE SUBSTITUTES

Article 9 of the Montreal Protocol calls upon participating parties to cooperate in research, development, and exchange of information on possible alternatives to ozone-depleting CFCs and halons. As one of the key U.S. agencies dealing with the stratospheric ozone issue, EPA will be involved in this future effort. EPA, however, has had long-standing responsibilities under section 153(b) of the Clean Air Act, as amended, to undertake research on "safe substitutes" for substances that directly or indirectly affect the stratosphere, especially the ozone in the stratosphere. Thus, even before the signing of the Montreal Protocol in 1987, EPA began to investigate whether other types of

CFCs, known as "non-fully halogenated CFCs" or "HCFCs," might be feasible substitutes for ozone-depleting CFCs. These alternative fluorocarbons have lower ozone-depletion potential because their chemical composition includes hydrogen, making them less stable. They tend to decompose in the lower atmosphere and consequently have much less chance of reaching and harming the stratosphere. Reports by an EPA contractor and an EPA-sponsored international committee of CFC experts indicated that some alternative fluorocarbons may prove to be successful substitutes, but that toxicity testing on these potential substitutes was incomplete.

EPA also has statutory responsibilities under the Toxic Substances Control Act (TSCA) to protect the public and environment from unreasonable risks posed by chemicals used in commerce, which include CFC substitutes. TSCA authorizes EPA to take steps to identify potentially harmful chemicals, gather information on their use and safety, and take appropriate control actions for those chemicals found to present an unreasonable risk to human health and the environment. However, the authorities provided under TSCA for regulating existing chemicals and new chemicals differ. "Existing" chemicals are defined under the provisions of TSCA as those that are listed in the TSCA Chemical Substance Inventory, which includes over 62,000 chemicals. "New" chemicals are defined as those not listed in the inventory.

While some CFC substitutes are new chemicals, most of them are existing chemicals because they are listed on the inventory (even though some have never been commercially produced). This fact has important ramifications for EPA's effort to review the safety of substitutes for ozone-depleting chemicals since, for the most part, only new chemicals are routinely subject to an EPA safety review before they are commercialized.

Review Authority for New Chemicals

Under section 5 of TSCA, any person who intends to manufacture or import a new chemical for commercial purposes in the United States must submit a notice called a "premanufacture notification" (PMN) to EPA at least 90 days before beginning manufacture. TSCA specifies that the notification include information available to the producer on the chemical's identity, intended uses, and health and environmental effects. EPA has 90 days (extendable to another 90 days) to review the notification and assess whether or not the new chemical presents or may present an unreasonable risk to human health or the environment. If EPA decides that additional data are needed to make this assessment, it can control the use of the chemical until the data are provided. If EPA determines that the chemical does in fact present an unreasonable risk, it is required to take control actions ranging from requiring labeling to banning the chemical. Once the chemical successfully goes through the premanufacture notification review process, it is considered an existing chemical and is put on the TSCA inventory of existing chemicals. Unless EPA has stipulated control measures as a result of its premanufacture notification review, the chemical can be produced by anyone, for any purpose, in any amount without submission of further notifications or additional EPA safety review.

While the premanufacture notification review provides EPA with an initial opportunity to screen a new chemical for safety, only a few potential CFC substitutes are "new chemicals" subject to this review process. Most of the potential CFC substitutes identified by EPA--both the alternative fluorocarbons and other industrial chemicals--are on the TSCA inventory of existing chemicals.[2]

Review Authority for Existing Chemicals

TSCA provides EPA with several authorities to obtain data for assessing risks that may be posed by chemicals on the TSCA inventory of existing chemicals. Section 8(e) requires that producers must report to EPA any information that suggests a substantial risk of injury to health or the environment could be caused by a particular chemical. Section 8(d) of TSCA authorizes EPA to require producers to provide EPA with their unpublished health and safety studies.[3] Also, section 8(a) allows EPA to collect production, use and exposure data from chemical producers. If EPA finds that a chemical could present an unreasonable health or environmental risk (or if there may be substantial human or environmental exposure to the chemical) and if testing is needed to develop sufficient data to determine the risks, EPA can use section 4 of TSCA to require chemical producers to perform such tests. Section 6 of TSCA authorizes EPA to take actions--ranging from labeling to a complete ban--to control the use of chemicals that it determines present an unreasonable risk to human health or the environment. However, until an existing chemical is shown to pose such a risk and appropriate control actions are implemented by EPA, the chemical can be produced by anyone, in any amount, and for any use without notification to EPA.

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[2] Among the alternative fluorocarbons, for example, HCFC-141b is considered a new chemical, while HFC-134a and HCFC-22, -123, and 142b are listed as existing chemicals.

[3] EPA defines "health and safety study" to mean "any study of any effect of a chemical substance or mixture on health or the environment or on both, including underlying data and epidemiological studies, studies of occupational exposure to a chemical substance or mixture, toxicological, clinical, and ecological or other studies of a chemical substance or mixture, and any test performed under TSCA . . . . Any data that bear on the effects of a chemical substance on health or the environment would be included." (40 C.F.R. 716.3).

There is an important TSCA provision, however, which gives EPA the opportunity to review the safety of chemicals on the TSCA inventory prior to their being put to new uses. By imposing a "significant new use rule" (SNUR) under section 5(a)(2) of TSCA on a specified existing chemical, EPA can require producers to notify the agency in advance of a significant new use of that chemical. The producer must provide information on the chemical, including its composition, projected volumes and worker exposure, and any available test data. If EPA decides that the information submitted is inadequate to assess whether the significant new use is safe, EPA can require that testing be done to collect additional data. The SNUR also gives EPA authority to put a hold on the chemical's new use while the data are being gathered and evaluated.

At present, none of the alternative fluorocarbons on the TSCA inventory of existing chemicals have SNURs attached to them. Consequently, they can be produced by anyone, in any volume, and for any use without an EPA safety review.

EPA'S APPROACH TO ASSESSING CFC AND HALON SUBSTITUTE SAFETY

Recognizing that special actions would have to be taken to assess potential substitutes classified as existing chemicals, EPA has considered various approaches to assessing the safety of existing chemical substitutes, as well as new chemical substitutes.

The approach ultimately adopted in November 1988 set several broad assessment goals.

As outlined in an internal memorandum, EPA's overall goal is "to ensure the introduction of safe substitutes"--that is, substitutes that present no "unreasonable risks." EPA stressed that "[a]ny long-term solution must not create new health or environmental problems." The memorandum also noted the importance of early EPA involvement in testing decisions for the substitutes "to ensure that testing needs for both new and existing substitutes are identified using consistent approaches, that needed testing is properly performed, and that evaluations of test data on the substitutes are performed in a consistent manner." Early review is important to ensure that any disagreements between EPA and chemical producers over testing are raised and resolved quickly in order to avoid unnecessarily delaying the introduction of safe substitutes.

While EPA's approach calls for new chemical substitutes to be identified and assessed through the normal premanufacture notification review required under section 5 of TSCA, its current plans for reviewing existing chemicals that may be used as substitutes call for only partial use of TSCA authorities. On April 18, 1989, EPA announced plans to implement our recommendation which called for EPA to use its TSCA section 8(d) authority to require producers to provide the agency with their unpublished health and safety studies on CFC and halon substitutes. EPA is still considering whether to require producers to report significant new uses of existing chemicals as substitutes.

Use of TSCA and Clean Air Act Authority to Require Data on Existing Chemical Substitutes

EPA told us on May 4, 1989, that it has initiated efforts to promulgate the section 8(d) rulemaking. While the agency will make use of a "model" rule that eases the difficulty of the process, we were told that it will be approximately 12 months before the required information is received.

At the same time it issues the section 8(d) rulemaking, EPA also plans to use TSCA section 8(a) authority to request additional information from producers on potential substitutes. This authority allows EPA to collect data on current and projected production quantities, as well as likely uses and exposure levels to humans and the environment. EPA commented that this additional request will not delay the collection of health and safety studies under section 8(d).

In the meantime, EPA also plans to obtain production, use, exposure, and health and safety information on many of the potential CFC substitutes by sending letters to producers requesting this information under section 114 of the Clean Air Act. Three separate letters are expected to be sent in May. Two will be sent to known producers of either terpenes or aqueous cleaners which have the potential to replace the solvent CFC-113. The third letter will be sent to the known producers of ten HCFCs and HFCs that have the potential to be substitutes for the controlled CFCs and halons. According to EPA, they will be sent to all of the companies that are listed on the TSCA Chemical Substance Inventory as producers of the potential substitutes.

The information that EPA will request through section 114 of the Clean Air Act will be comparable in nature to that required by section 8(d) of TSCA. Section 114 letters, however, will only be sent to those companies known to have produced these chemicals some time in the past, and the responses will only provide data for a particular point in time. Section 8(d) of TSCA, on the other hand, applies to all companies, and requires the submission of data on an ongoing basis.

EPA has used section 114 to gather information on CFC substitutes, in the past, but without complete success. In December 1987, EPA attempted to obtain testing information from the seven domestic CFC and halon producers, but two producers would not respond with the requested data. EPA made followup requests to both producers. One producer did not respond, even after a second followup request. The other producer replied in February 1988 that it would supply the requested testing information by March. However, this information was not supplied. In June 1988, after followup by EPA, the producer replied that it was a member of an international testing group called PAFT, or Program for Alternative Fluorocarbon Toxicity Testing made up of over a dozen major chemical companies. The producer referred EPA to the chairman of PAFT for information regarding its testing. Other producers who had responded to EPA's original request also mentioned their involvement in PAFT, but provided no details on the testing plans that were being developed by PAFT.

The chairman of PAFT told us that the PAFT protocol prohibits any one member company from disclosing testing information. He added, though, that the protocol recognizes that this restriction can be superceded by any regulations in a particular country that require a company to report toxicity information. In a January 1988 letter to the EPA Administrator, the PAFT chairman stated that "[i]t is intended that the results from the test programs will be published in the open literature. In addition, any significant interim results will be promptly communicated to regulatory authorities as required by law" [emphasis added].

EPA did not contact PAFT about its testing program until after the November 1988 assessment memorandum was signed. In a December 5, 1988, letter to the PAFT chairman, EPA invited PAFT representatives to meet with EPA staff "to present your on-going activities and future plans for toxicity testing of the chemicals covered by your organizations." Cn March 22, 1989, EPA met with three PAFT members and discussed PAFT's planned and ongoing testing for CFC substitutes. On April 17, 1989, EPA sent a letter to the three companies requesting information on PAFT's testing program and schedule, including PAFT's rationale for conducting or not conducting certain tests. The letter also requested the results of tests already completed by PAFT, and a copy of the organization's bylaws and any other agreements or contracts which pertain to the domestic producers' obligations under section 8(e) of TSCA to report substantial risks. The letter requested a response by May 16, 1989.

We recognize that it is important for EPA to review the producers' testing plans as quickly as possible, especially given the fact that the producers' testing is underway and EPA was slow in coming to closure on how to approach the safety issue. We also believe that the reporting of health and safety studies should be put on a formal basis. We believe that TSCA section 8(d) authority is an appropriate vehicle for obtaining health and safety information from PAFT members doing business in the United States and subject to TSCA, as well as from domestic chemical producers and importers who are not members of PAFT. Use of section 8(d) will establish an ongoing regulatory mechanism to provide EPA with health and safety studies on substitutes on a timely basis over the coming years. This is a particularly important point since the substitute safety issue will take years to resolve due to the long-term nature of the testing and the likelihood that a series of substitutes will be developed over several years to replace the regulated CFCs and halons. We welcome EPA's recent decision to follow the recommendation in our report to make use of section 8(d), provided that the authority is implemented properly.

Use of TSCA Authority to Review and Control New Uses of Existing Chemical Substitutes

Neither EPA's November 1988 assessment approach, nor current plans specifically call for the use of TSCA section 5(a)(2) to promulgate "significant new use" rules, or SNURs, on any of the chemical substitutes. The EPA Administrator has recently indicated, however, that the agency is actively considering options related to the use of SNURs. We believe that SNURs are warranted in the case of alternative fluorocarbons that are currently on the TSCA inventory of existing chemicals, as well as fluorocarbons that may later be added to the inventory following a premanufacture notification review. We also believe that chemical substitutes other than alternative fluorocarbons should be considered for SNURs, depending on their known toxicity, exposure levels, and exposure situations as substitutes in CFC applications.

SNURs, in essence, provide EPA with review and control authorities over specified existing chemicals similar to the premanufacture review for new chemicals required under TSCA. SNURs would ensure that EPA is notified before existing alternative fluorocarbons and other existing chemicals are put to new significant uses as CFC and halon substitutes, and they would give EPA the opportunity to review the producers' health and safety data to determine whether the chemicals could be used safely in the particular exposure situations that the new uses involve. This authority is also useful in the case of new fluorocarbons that undergo premanufacture notification review and are subsequently added to the inventory. A SNUR would enable EPA to monitor changes in the manufacture and use, and thus exposure, of these newer chemicals.[4] Also, unlike section 8(d) authority, which is limited to data-gathering, SNURs enable EPA to quickly control significant new uses of the substitutes, if deemed necessary to protect human health and the environment.

Whether EPA will eventually use SNURs for CFC and halon substitutes remains an open issue at this time. EPA told us that SNURs are cumbersome rules to develop, promulgate, and implement. Part of the difficulty in developing a SNUR involves the need to fine-tune the SNUR to capture adequately the specific chemicals and uses of concern. According to Office of Toxic Substances (OTS) staff, a SNUR rulemaking can take 6 to 8 months if there are no problems, but a year is more common.

Without SNURs, only new chemical substitutes would be routinely subject to review before commercialization. An existing substitute that had never been commercialized would face no such review unless a SNUR is imposed on it. Promulgating SNURs on alternative fluorocarbons and other chemical substitutes listed on the TSCA inventory of existing chemicals would essentially bring them into a similar review process as the "new" fluorocarbons and would, therefore, help EPA meet its declared assessment goal of having both new and existing chemical substitutes undergo consistent testing and review before being used commercially.

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[4] In an earlier report, Assessment of New Chemical Regulation Under the Toxic Substances Control Act (GAO/RCED-84-84, June 15, 1984), we discussed the advantages of using SNURs to monitor changes in the manufacture and use of new chemicals that have undergone EPA's premanufacture notification review and have been added to the TSCA inventory of existing chemicals.

LEGAL ISSUES RELATED TO USING ECONOMIC MEASURES TO IMPLEMENT THE MONTREAL PROTOCOL

EPA has implemented an allocated quota system to carry out the Montreal Protocol on Substances That Deplete the Ozone Layer. However, EPA is exploring the use of economic measures because of its concern that restricting future supplies of CFCs and halons could produce sizeable "windfall profits" to producers, and create an economic incentive for producers to delay introduction of safe substitutes. The measures being explored include regulatory fees to accompany the existing allocated quota system and an auction system to replace the quota system. The measures would be intended to recover the market value of the restricted right to produce CFCs and halons.

EPA has not yet proposed a rule for the use of economic measures. It would be highly speculative to conclude whether EPA is authorized under certain law to use such measures before EPA makes a specific proposal and articulates the legal and other support for it. Nevertheless, it is clear that if EPA decides to use economic measures to implement the Protocol, it will have to resolve certain fundamental legal issues, such as whether such measures constitute user fees, regulatory fees, or taxes, and whether EPA is authorized to establish them under current law. Further, because current court precedents do not definitively resolve some of these issues, EPA's implementation of a fee or auction system is likely to result in litigation. In this regard, if EPA replaces the allocated quota system with an auction system subsequently voided by the courts, compliance with the Montreal Protocol could be adversely affected. These uncertainties suggest that legislative action would be a more appropriate course to follow in addressing whether a fee or auction system should be established to capture windfall profits.

BACKGROUND

The Montreal Protocol went into force on January 1, 1989. Its purpose is to reduce the depletion of stratospheric ozone by limiting the participating countries' total production and consumption of certain ozone-depleting chemicals according to a specified schedule. Two groups of chemicals are affected: CFCs and halons.

The Protocol ties future production and consumption of the controlled chemicals to 1986 levels.[1] Production and consumption of CFCs will be frozen at 1986 levels for the twelve-month period beginning July 1, 1989. CFCs then would be reduced by 20 percent from the 1986 levels by June 30, 1994, and 50 percent by June 30, 1999. Production and consumption of halons will be frozen at 1986 levels in 1992. Within each group of substances (CFCs and halons), each chemical is assigned an ozone-depletion weight which measures its relative ability to destroy ozone molecules in the stratosphere. Production may be shifted from a chemical in one group to another chemical in the same group, provided that the total ozone-depletion potential is not increased.

The EPA issued a final rule under section 157(b) of the Clean Air Act, 42 U.S.C. § 7457, to implement the Montreal Protocol.[2]

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[1] Production is defined as the amount of controlled chemicals produced minus the amount destroyed by approved technologies. Consumption is defined as production of controlled chemicals plus imports minus exports.

[2] 53 Fed. Reg. 30566 (August 12, 1988).

The rule allocates production and consumption to firms based on their 1986 production and consumption levels. EPA rejected a regulatory fee or auction system in favor of the allocated quota system.[3] However, because of concern that the quota system could result in potential windfalls to producers and create an economic incentive for producers to delay introduction of chemical substitutes, EPA also issued an Advance Notice of Proposed Rulemaking to further explore the use of economic measures to implement the Protocol.[4]

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[3] EPA gave the following reasons for selecting the quota allocation system:

> "EPA has concluded that the allocated quota system is the appropriate method for implementing the Montreal Protocol for several reasons. One, by directly regulating the supply of CFCs and halons, the allocated quota system is a straightforward method of ensuring that the requirements of the Montreal Protocol are met. Two, it is clearly lawful, in contrast to the auction and regulatory fee systems which raise legal issues. Three, as a market-based approach, the allocated quota system is economically efficient. Four, it is relatively simple to administer, since the producers and importers subject to the allocated quotas are small in number. While EPA recognizes that an allocated quota system has the potential for windfall profits and the concentration of market power in relatively few companies, it does not believe those disadvantages would prevent the system from bringing about the reductions in ozone-depleting substances required by the Protocol.
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> EPA has selected the allocated quota system rather than other strategies, given the allocated quota systems capability of implementing the Montreal Protocol in an economically efficient, low cost manner and the legal and other concerns associated with other systems. However, EPA recognizes that the use of an allocated quota system standing alone could result in substantial windfalls to a small number of CFC and halon producers which could create an economic incentive for these firms to delay the introduction of chemical substitutes.
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> Because of this concern, EPA is continuing to examine several alternatives to the use of an allocated quota system alone. . . ." 53 Fed. Reg. 30579 (August 12, 1988).

The economic measures being explored by EPA generally are regulatory fees coupled with the allocated quota system and an auction system. Stated simply, a regulatory fee would be a direct charge on producers with allocations to recover some or all of the windfalls accruing to them. EPA also is exploring auctioning production and consumption rights to any interested party, which presumably would yield a price for these rights that reflects the expected windfall.

As discussed below, there are significant legal issues surrounding EPA's authority to use either of these measures. These issues are whether these measures would be viewed as user fees, regulatory fees, or taxes, and whether EPA is authorized to implement them under existing law.

DISCUSSION

Generally, courts have addressed legal challenges to an agency's authority to levy a charge on the public by analyzing the nature of the charge and whether it falls within the statutory authority relied on by the agency. Charges characterized as "user charges" are generally authorized by 31 U.S.C. § 9701, for which a significant body of case law exists. Other charges characterized as "regulatory fees" may be upheld by the courts when they are either expressly provided by the agency's authorizing legislation or deemed necessary to accomplish a legitimate regulatory purpose under a broad grant of statutory authority. However, courts generally conclude that the authority to assess a charge does not include the authority to tax, and have been unwilling to uphold charges when doing so would move the authorizing statute towards a delegation of Congress' taxing power, absent a clear expression of legislative intent to the contrary.

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[4] 53 Fed. Reg. 30604 (August 12, 1988).

User Charges

Two Supreme Court decisions provide the framework for analyzing charges established by agencies under the authority of the so-called User Charge Statute.[5]

National Cable Television Co. v. United States, 415 U.S. 336 (1974), concerned the legality of annual fees assessed by the Federal Communications Commission (FCC) on cable television systems at a rate of 30 cents per subscriber. FCC justified the assessment on the ground that the User Charge Statute authorized FCC to recover all of its costs in regulating cable television systems. The Supreme Court reversed a lower court approval of the fee.

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[5] The User Charge Statute, formerly 31 U.S.C. § 483a and now codified at 31 U.S.C. § 9701, provides:

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"(b) The head of each agency (except a mixed-ownership Government corporation) may prescribe regulations establishing the charge for a service or thing of value provided by the agency. Regulations prescribed by the heads of executive agencies are subject to policies prescribed by the President and shall be as uniform as practicable. Each charge shall be--

(1) fair; and
(2) based on--
  (A) the costs to the Government;
  (B) the value of the service or thing to the recipient;
  (C) public policy or interest served; and
  (D) other relevant facts . . . ."

The Court discussed the difference between a tax and a fee, which it described as incident to a voluntary act involving a government service that bestows a benefit on an individual.[6] However, the Court chose not to address whether the User Charge Statute authorized the levying of taxes, in which case the statute would be subject to challenge as an unconstitutional delegation of the taxing power.[7]

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[6] The Court stated:

> "Taxation is a legislative function, and Congress, which is the sole organ for levying taxes, may act arbitrarily and disregard benefits bestowed by the Government on a taxpayer and go solely on ability to pay, based on property or income. A fee, however, is incident to a voluntary act, e.g., a request that a public agency permit an applicant to practice law or medicine or construct a house or run a broadcast station. The public agency performing those services normally may exact a fee for a grant which, presumably, bestows a benefit on the applicant, not shared by other members of society. It would be such a sharp break with our traditions to conclude that Congress had bestowed on a federal agency the taxing power that we read 31 U.S.C. § 483a narrowly as authorizing not a 'tax' but a 'fee.' A 'fee' connotes a 'benefit' and the Act by its use of the standard 'value to the recipient' carries that connotation. The addition of 'public policy or interest served, and other pertinent facts,' if read literally, carries an agency far from its customary orbit and puts it in search of revenue in the manner of an Appropriations Committee of the House.
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> "The lawmaker may, in light of the 'public policy or interest served,' make the assessment heavy if the lawmaker wants to discourage the activity; or it may make the levy slight if a bounty is to be bestowed; or the lawmaker may make a substantial levy to keep entrepreneurs from exploiting a semipublic cause for their own personal aggrandizement. Such assessments are in the nature of 'taxes' which under our constitutional regime are traditionally levied by Congress." 415 U.S. 340-341.

Rather, the Court focused on the function of the FCC to safeguard the public interest[8] and whether the fee assessed by the FCC measured "the value to the recipient." In so doing, the Court stated that the words "value to the recipient" and not "public policy or interest served and other pertinent facts" in the User Charge Statute were relevant. The Court then concluded that the FCC had not clearly used the correct standard because assessing a fee to recover all of the FCC's cost in regulating the cable industry would recoup costs unrelated to the conferral of any special benefit.[9] The Court reversed and remanded the case to the FCC for further consideration consistent with its opinion. 415 U.S. at 344.

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[7] 415 U.S. at 341-342.

[8] The Court stated that:

> "There is no doubt that the main function of the Commission is to safeguard the public interest in the broadcasting activities of members of the industry. If assessments are made by the Commission against members of the industry which are sufficient to recoup costs to the Commission for its oversight, the CATV's and other broadcasters would be paying not only for benefits they received but for the protection services rendered the public by the Commission . . . . " 415 U.S. at 341.

[9] The Court stated that:

> "It is not enough to figure the total cost (direct and indirect) to the Commission for operating a [cable] unit of supervision and then to contrive a formula that reimburses the Commission for that amount. Certainly some of the costs inured to the benefit of the public, unless the entire regulatory scheme is a failure, which we refuse to assume." 415 U.S. at 343.

A companion case, Federal Power Commission v. New England Power Co., 415 U.S. 345 (1975), also addressed the User Charge Statute. The Federal Power Commission (FPC) assessed fees to recoup costs it incurred in regulating the interstate transmission and sale of electricity and the interstate delivery of natural gas.[10] The FPC justified the fees on the basis that their regulations benefited the regulated industries by creating an economic climate for greater usage of their services, the result of which was to place the industries in sounder financial position. 415 U.S. at 348.

The Court agreed with a lower court's conclusion that whole industries are not in the category of those who may be assessed under the User Charge Statute, its thrust reaching only specific charges for specific services to specific individuals or companies. 415 U.S. at 349. The Court noted that OMB Circular No. A-25, September 23, 1959, stated that a reasonable charge should be made to each identifiable recipient for a measurable unit or amount of government service or property from which he derives a special benefit, and that no charge should be made for service rendered when the identification of the ultimate beneficiary is obscure and the services can be primarily considered as benefiting the general public. 415 U.S. at 349-350.

The Court concluded that the OMB Circular represented the proper construction of the User Charge Statute, and keeps the statute within the boundaries of a fee system and away from the domain of taxes toward which the FPC's economic climate argument would lead. In this regard, the Court pointed out that some of the assessments made by the FPC would be on companies which had no proceedings before, or had neither requested nor received benefits from, the FPC during the year in question. The Court stated that while some regulatory rulings might result in each member of an industry being an identifiable recipient of the regulator's service, in which case a fee might be warranted, the fees FPC assessed on the basis of general regulatory activities were not within the scope of the statute. 415 U.S. at 351. The Court affirmed the Court of Appeals decision to set aside the annual charges.

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[10] The FPC's fees were assessed against electric utilities under the Federal Power Act and natural gas companies under the Natural Gas Act. In both cases, the FPC determined its costs of administration and, after deducting certain items, assessed the remainder against the utilities and companies in proportion to their activities.

The analysis contained in the National Cable and New England Power cases suggests that an agency may assess a fee under the User Charge Statute for specific services provided to specific individuals and companies if the fee measures the "value of the service to the recipient." However, the cases also suggest that the Courts are not sympathetic to a fee based either on the public policy or interest criteria set forth in 31 U.S.C. § 9701 (b)(2)(C)-(D) or on the costs to the government of general regulatory activities.

However, these cases did not provide specific criteria for measuring "value to the recipient." Since "cost to the government" is already addressed by 31 U.S.C. § 9701(b)(2)(A), to equate "value to the recipient" and "cost to the government" would appear inconsistent with a generally accepted rule of statutory construction, i.e. statutory provisions should not be construed to render one mere surplusage. Nevertheless, a number of the lower courts have in fact held that "value to the recipient" cannot exceed the "cost to the government" in providing the identified benefits.[11]

These lower court cases suggest some difficulty for EPA in assessing a fee under the User Charge Statute which exceeds its cost in providing the specific benefit conferred. To this point, the fee and auction system EPA is exploring appears to be based on the "windfall profits" that will accrue to producers as a result of EPA's allocating to the producers the right to produce restricted commodities, and not on EPA's costs in conferring the benefits. Further, a fee assessed under the User Charge Statute which is designed to serve the public policy of creating an economic incentive to develop safe substitutes may be viewed as the type of assessment which moves the statute away from fees and towards taxes, and which the Court warned against in New England Power.

Nevertheless, this situation does differ from the cases discussed above. New England Power involved economic benefits which the Court concluded were general, unspecified and unmeasured. Here, there presumably will be companies applying to EPA for production and consumption allocations, and EPA may be able to measure the economic benefit accruing to each company from EPA's regulatory actions. However, it is unclear what importance the courts will give to these factors, and whether they would entertain a fee under the User Charge Statute based on "windfall profits" earned by producers.

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[11] See, e.g., Central & Southern Motor Freight Tariff Ass'n v. United States, 777 F.2d 722, 729 (D.C. Cir. 1985); Nevada Power Co. v. Watt, 711 F.2d 913, 933 (10th Cir. 1983); Yosemite Park and Curry Co. v. United States, 686 F.2d 925, 931 (Ct. Cl. 1982); Mississippi Power & Light v. NRC, 601 F.2d 223, 230 (5th Cir. 1979), cert. denied, 444 U.S. 1102 (1980); National Cable Television Ass'n v. United States, 554 F.2d 1094, 1106-07 (D.C. Cir. 1976); Electronic Industries Ass'n v. FCC, 554 F.2d 1109, 1114-15 (D.C. Cir. 1976); National Ass'n of Broadcasters v. FCC, 554 F.2d 1118, 1128 (D.C. Cir. 1976); Capital Cities Communities, Inc. v. FCC, 554 F.2d 1135, 1138 (D.C. Cir. 1976).

Regulatory Fees

The concept underlying regulatory fees is that the government may levy charges on a part of its citizenry incident to some regulatory purpose. A seminal case in this area is the Head Money Cases, 112 U.S. 580 (1884). This case involved legislation which provided for a duty of 50 cents on shipowners for each and every passenger who is not a citizen of the United States who enters a port in the United States from a foreign port. The money collected was paid into the Treasury in a special fund used to defray the expense of regulating immigrations under the act and for the care of immigrants arriving in the U.S.

The statute was challenged on the grounds that the duty was a tax which violated the Taxing Clause of the Constitution in that it was not levied for the common defenses and general welfare of the United States and that it was not uniform throughout the United States.[12] The Court first discussed in dicta that there was substantial uniformity under the statute within the meaning of the Constitution and that it would not be difficult to show that the contributions of shipowners were for the general welfare of the United States. 112 U.S. at 594-595. However, the Court decided that the true answer to the challenge to the statute was that the power exercised under the statute was not the taxing power. Rather, the payment was a mere incident of Congress' regulation of commerce, namely that part of foreign commerce involved in immigration. 112 U.S. at 595. In this regard, the Court noted that the authorizing legislation was designed to address potential evils inherent in the business of bringing foreigners to this country, and the shipowners reaped the profit from this business. The Court thus concluded that the statutory payment was not a tax within the meaning of the Constitution, but rather money that Congress was empowered to collect under the statute as part of its statutory scheme for regulating commerce.

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[12] U.S. Constitution, Art. I, Sec. 8, cl. 1 which provides:

> "The Congress shall have power to lay and collect taxes, duties, imposts, and excises, to pay the debts and provide for the common defense and the general welfare of the United States; but all duties, imposts, and excises shall be uniform throughout the United States."

Lower court decisions have similarly sustained statutory charges levied when expressly authorized and there is a close relationship between the charge and the regulatory purpose. *E.g.*, *State of South Carolina ex rel Tindal v. Block*, 717 F.2d 874, 887 (4th Cir. 1983), *cert*. *denied* 465 U.S. 1080 (1984); *United States v. Stangland*, 242 F.2d 843 (7th Cir. 1957); *Rodgers v. United States*, 138 F.2d 992 (6th Cir. 1943). In rejecting arguments that a regulatory assessment was a tax, the courts have stated that the assessment is a tax only when its primary purpose is raising revenue. See *e.g.*, *Rural Telephone Coalition v. FCC*, 838 F.2d 1307, 1314 (D.C. Cir. 1988); *Brock v. Washington Metropolitan Area Transit Auth.*, 796 F.2d 481, 188-89 (D.C. Cir. 1986), *cert*. *denied* 481 U.S. 1013 (1987).

Therefore, the question of Congress' authority to enact, and the executive branch's authority to implement legislation that explicitly establishes a regulatory fee is fairly well-settled. However, the authority of the executive branch to establish a regulatory fee under a general grant of authority is more murky.

In FEA v. Algonquin Sng, Inc., 426 U.S. 548, (1976), a regulatory fee established by the President was upheld. This case involved whether section 232(b) of the Trade Expansion Act as amended, 19 U.S.C. § 1862(b), authorized the President to impose a license fee to regulate the importation of oil into the country. Section 232(b) of the Act provides that if an article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security, the President is authorized to take such action, and for such time, as he deems necessary to adjust the imports of such article and its derivatives so that such imports will not threaten to impair the national security.

After finding that the importation of crude oils and crude oil derivatives and products threatened to impair the national security, the President in 1959 imposed under a predecessor statute a system of quotas on the importation of petroleum and petroleum products. The quotas were not wholly successful in decreasing the gap between domestic consumption and production, and the quotas were increased periodically to satisfy domestic consumption. Therefore, the President instituted a program in 1973 to substitute fees for quotas. The program established a gradually increasing schedule of license fees for importers with some oil imports initially exempted. In 1975, based on a section 232(b) finding, the President accelerated the increase in license fees and added supplemental fees on all oil imports.

The President's 1975 action was challenged on the basis that the imposition of the fees was beyond the President's constitutional and statutory authority. The Supreme Court concluded that the statute was a proper delegation of authority and that the fees were authorized by the broad language of the statute.

The Court first rejected the argument that reading section 232(b) to authorize a license fee system presents a serious question of unconstitutional delegation of legislative power. The Court, in noting that it had previously upheld the constitutionality of legislation empowering the President to increase or decrease import duties in order to equalize the differences between foreign and domestic production costs for similar articles, stated:

> "If Congress shall lay down by legislative act an intelligible principle to which the [President] is directed to conform, such legislative action is not a forbidden delegation of legislative power." 426 U.S. at 548 (quoting Hampton & Co. v. United States, 276 U.S. 394, 409 (1928)).

The Court then concluded that section 232(b) satisfied the Hampton test. The Court pointed out that section 232(b) establishes clear preconditions to Presidential action, and does not give the President unbounded leeway in deciding what action to take in the event the preconditions are fulfilled. In fact, section 232(b) authorizes the President to act only to the extent necessary to adjust the imports of such article and its derivatives so that such imports will not threaten to impair the national security. Further, section 232(c) articulates a series of specific factors to be considered by the President in exercising his authority under 232(b). 426 U.S. at 559.[13]

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[13] The Court rejected the challengers' reliance on National Cable, discussed previously. In so doing, the Court contrasted that case's consideration of the open-ended nature of the "public policy or interest served, and other pertinent facts" provision in the User Charge Statute with the more limited authorization in section 232(b) and clearly articulated standards in section 232(c). 426 U.S. at 559, note 10.

The Court then proceeded to reject the challengers' argument that the President's authority to adjust imports under section 232(b) encompassed only quantitative methods such as quotas, but not monetary methods such as fees. The Court concluded that the broad language of the statute and its legislative history belies any suggestion that Congress intended to limit the President's authority to imposing quotas. 426 U.S. at 561, 570. However, in approving the license fees, the Court made clear that its holding did not compel the conclusion that any Presidential action having a remote impact on imports also is authorized.

This warning by the Court was prophetic. In Independent Gasoline Marketers Council v. Duncan, 492 F. Supp. 614 (D.D.C. 1980), the Court struck down the Petroleum Import Adjustment Program (PIAP) initiated by the President under the authority of section 232 of the Trade Expansion Act. The PIAP would have collected a floating license fee on importers which would be measured by the effect the fee had on the retail price of all gasoline. The purpose was to raise the price of all gasoline by 10 cents a gallon. Importers would have been reimbursed their costs by refiners through the PIAP entitlement program while refiners would pass through the costs on their sales of both domestic and imported oil products. The court determined that the fee was not directed at the reduction of imported oil but at the reduction of the consumption of all oil with only an incidental effect on the retailing of imported gasoline. The court struck down the fee as being unauthorized by the statute. The court held that unlike Algonquin where the fee assessed directly affected the price of imported oil relative to domestic oil, the PIAP fee had no similar effect.

The court further held that section 232 does not authorize the President to impose general controls on domestically produced goods either through monetary mechanisms or through quantitative devices. The statute provided for the regulation of imports, which may have an incidental impact on domestic goods. Since the primary purpose of the PIAP fee was to regulate both domestic and imported oil, it was not within the scope of authority conferred by the statute, and therefore unauthorized. 492 F. Supp. at 618.

Taxes

As the foregoing discussion of user charges and regulatory fees demonstrates, whether an agency possesses the authority to exact a charge depends not on its characterization, but instead on whether the charge is properly exacted pursuant to an adequate grant of authority conferred by law. When the courts find a specific charge to be unauthorized, they may do so by rejecting the agency's request to read the statute broadly on the grounds that such a reading would move the statute towards a delegation of Congress' taxing power. The courts often avoid addressing the taxing power by concluding that the proposed charge does not satisfy the statutory standards applicable to that fee.

Thus, even in cases like National Cable where the Supreme Court has chosen to describe some of the attributes of taxes[14], it has not had to define what constitutes a tax. The Court indicated that taxes may be arbitrary, going solely to ability to pay, based on property or income. Further a tax may be made heavy to discourage an activity[15] or to prevent exploitation of a semipublic cause for private gain. Alternatively a tax may be made light to bestow a bounty.

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[14] See footnote no. 11.

However, two recent cases have addressed the proposition that the taxing power may be delegated to an agency and concluded that an agency may assess a tax under adequate standards. Florida Power & Light Co. v. U.S., 846 F.2d 765, 771-775 (D.C. Cir. 1988) (appeal pending); Skinner v. Mid-America Pipeline Co., 57 U.S.L.W. 4458 (U.S. April 25, 1989).

In Florida Power, the court considered the authority conferred on the Nuclear Regulatory Commission (NRC) by section 7601 of the Consolidated Omnibus Budget Reconciliation Act of 1985 (COBRA), 42 U.S.C.A. § 2213 (West Supp. 1988). Section 7601 directed the NRC to assess and collect annual fees from NRC licensees to fund all or part of the activities conducted by the NRC. The NRC is required to impose the annual charges through rulemaking subject to three limitations: (1) the aggregate annual fee plus other amounts collected (e.g., under the User Charge Statute) may not exceed thirty-three percent of the NRC's fiscal year costs, (2) the annual charges must be reasonably related to the regulatory services provided by the NRC and (3) the charges shall fairly reflect the cost of the NRC providing the service.

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[15] Under current court precedent, user charges are recoverable when they are intended to recoup costs incurred by an agency for bestowing a special benefit on an identifiable recipient, and not the public generally. Regulatory fees may be unrelated to the bestowing of any special benefit on the party assessed, but instead may be assessed on the basis of accomplishing some independent regulatory objective authorized by law. For example, such fees may be intended to discourage an activity--one of the attributes of a tax. Regulatory fees unlike taxes may not be arbitrary. However, if the power to exact a tax is to be exercised by an agency, it must be pursuant to an appropriate delegation of authority and the agency's action must be guided by an intelligible legislative standard. In this sense the agency may not act arbitrarily.

The NRC adopted a rule setting a uniform annual fee for each power operating licensee by calculating the NRC's costs budgeted for certain generic services (services that do not have a specific identifiable beneficiary) which it concluded were reasonably related to regulating all licensees in the category. The costs were compared to thirty-three percent of the NRC's budget less fees collected under the User Charge Statute, and the resulting amount divided by the number of operating licensees.

After rejecting the contention that the judicial standard applicable to the User Charges Statute should also be applied to assessments under section 7601, the court held that even if the assessment of the fees for generic services was characterized as a tax, the delegation of authority to the NRC would meet constitutional limitations. The court viewed the constitutional problems discussed in prior cases as being one of adequate standards, rather than holding that the taxing power cannot be delegated. The Court then concluded that NRC had exercised its authority in conformity with an intelligible legislative standard and section 7601 met these limitations. 846 F.2d at 772-776.

More recently in Skinner, the Supreme Court considered the authority conferred on the Secretary of Transportation by section 7005 of COBRA, 49 U.S.C. App. § 1682a (1982, Supp. IV). Section 7005 directs the Secretary of Transportation to establish a fee schedule based on the usage, in reasonable relationship to volume-miles, miles, revenues, or an appropriate combination thereof, of natural gas and hazardous liquid pipelines. These fees are to be collected annually, from persons operating (1) all pipeline facilities subject to the Hazardous Liquid Pipeline Safety Act of 1979 (HLPSA), 49 U.S.C. App. § 2001 et seq., and (2) all pipeline transmission facilities and all liquified natural gas facilities subject to the jurisdiction of the Natural Gas Pipeline Safety Act of 1968 (NGPSA), 49 U.S.C. App. § 1671 et seq. The fees collected are to be sufficient to meet the costs of activities under the HLPSA and NGPSA and are to be used to the extent provided for in advance in appropriation Acts to fund activities authorized under the HLPSA and NGPSA. However, the fees may not exceed 105 percent of the aggregate of appropriations made for such fiscal year for the activities to be funded by the fees.

The Secretary of Transportation determined that the total pipeline safety program costs, excluding state grants-in-aid, would be allocated based on pipeline miles at 80 percent for persons regulated by the NGPSA and 20 percent for persons regulated by the HLPSA. Five percent of the total gas program costs were to be borne by Liquified Natural Gas (LNG) facility operators allocated as a function of storage capacity and number of LNG plants. Certain operators were excluded since administrative costs of assessing the fees would exceed recoveries.

The Supreme Court upheld the constitutionality of the statute. The Court first held that even if the user fees are a form of taxation, the delegation of discretionary authority under Congress' taxing power is subject to no constitutional scrutiny greater than that which the Court has applied to other delegations of congressional powers. The Court next held that the Congress had clearly indicated its intention to delegate to the Executive the discretionary authority to recover administrative costs not inuring directly to the benefit of regulated parties by imposing additional financial burdens on those parties. Finally, the Court held that the law provided the Secretary with intelligible guidelines to follow in exercising this discretionary authority. The Court's decision thus appears to resolve the issue of whether the Congress may delegate to agencies the authority to levy taxes.

EPA's Statutory Authority

EPA has identified section 157 of the Clean Air Act, 42 U.S.C. § 7457, and section 6 of the Toxic Substances Control Act, 15 U.S.C. § 2605, as potential authority to implement economic measures as part of its regulatory program.

Section 157(b) of the Clean Air Act, 42 U.S.C. § 7457(b), requires the Administrator to:

> ". . . propose regulations for the control of any substance, practice, process, or activity (or any combination thereof) which in his judgment may reasonably be anticipated to affect the stratosphere, especially ozone in the stratosphere, if such effect in the stratosphere may reasonably be anticipated to endanger public health or welfare. Such regulations shall take into account the feasibility and the cost of achieving such control. . ."

This grant of regulatory authority is broad and neither requires nor prohibits a particular type of regulatory control. Furthermore, the legislative history lends some support to the view that the Administrator be given latitude to use a variety of methods to address this problem. For example, the report of the House Interstate and Foreign Commerce Committee[16] states that under this provision

> ". . . the Administrator is directed to take into account the 'feasibility and cost' of complying with any stratosphere

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[16] H.R. Rep. No. 95-294, 95th Cong., 1st Sess., 101 (1977).

> protection measure recommended or promulgated by him. By using this language, the committee intends to assure that any such measure is undertaken only with adequate awareness of its costs and its other economic impacts and social impacts. This informed awareness is necessary for the Administrator in determining what combination of stratospheric protection measures are most appropriate, and for the Congress in reviewing any such measures recommended or promulgated by the Administrator" [emphasis added].

The report also states that the primary purpose of the statute is to protect the public health, and that therefore "the committee does not wish to tie the Administrator's hands or confer an authority which is cumbersome or unduly difficult to use, administer, or enforce."[17]

Section 6(a)(5) of the Toxic Substances Control Act provides that:

> "If the Administrator finds that there is a reasonable basis to conclude that the manufacture, processing, distribution in commerce, use, or disposal of a chemical substance or mixture, or that any combination of such activities, presents or will present an unreasonable risk of injury to health or the environment, the Administrator shall by rule apply one or more of the following requirements to such substance or mixture to the extent necessary to protect adequately against such risk using the least burdensome requirements: * * * (5) A requirement prohibiting or otherwise regulating any manner or method of commercial use of such substance or mixture."

Section 6(c) establishes issues to be considered and requirements to be followed by the Administrator in promulgating such requirement.

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[17] *Id.*

The conferral of authority under this provision is also broad. As with the Clean Air Act, there is no express mention of the use of economic measures as a means of bringing about a legitimate regulatory objective. Further, the legislative history does not indicate whether Congress intended the use of some form of economic measure to be authorized or prohibited.

As we discussed in the Head Money Cases, economic measures for regulatory purposes can find their origin in powers other than the taxing power (for example the commerce power). Applying the holding of the Court in Algonquin, an express conferral of the use of economic means is not necessary where there is a broad grant of authority coupled with an adequate standard against which to apply that authority.

However, the case before us presents several unresolved issues. First, does the Clean Water Act or the Toxic Substances Control Act contain the broad grant of authority under which EPA may use the economic measures being employed. Second, do these acts provide adequate standards for EPA to follow? Third, if so, do the economic measures being considered meet those standards?

In addressing these questions, a fundamental issue is whether the economic measures will be primarily employed to bring about a legitimate regulatory objective or to generate revenue. In this regard, EPA's primary focus has been on the windfall producers will derive from the allocated quota system and the effect this could have on the development of substitutes.[18] We note that in Algonquin, the fee was imposed after quotas on imports failed to bring about a reduced reliance on imported petroleum products. In the present situation, EPA already has in place a regulation it deems effective to implement the Montreal Protocol. Whether these considerations would have a bearing on the legality of any regulatory scheme that employs economic measures remains to be seen.

Auctions

One way to evaluate their auction being considered is to view it as a surrogate for a fee, and analyze EPA's authority to implement the auction under the same criteria applicable to a fee as previously discussed. An alternative is to view the auction as a separate and distinct regulatory tool.

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[18] See also The United States Budget In Brief, Fiscal Year 1990, p. 89, which states:

> "The administration is also proposing to charge market value for the rights to produce chlorofluorocarbons (CFCs) and related substances that deplete the ozone layer (CFCs are used as refrigerants and solvents as well as to make insulation). Current regulations, which require major reductions in the production of CFCs, will lead to a significant rise in the price of CFCs. By charging market value for these limited production rights, the revenue resulting from the price rise would accrue to the Treasury for the benefit of the general public, rather than to producers as windfall profits. Capturing this windfall will also remove the potential disincentive that profits might have on current producers to quickly develop environmentally safer but potentially less profitable substitutes for CFCs. Mechanisms to be considered could include permit fees and auctions. The charges for these rights are expected to generate proceeds in 1990 of $0.4 billion."

See also Major Policy Initiatives, 1990 pp. 154-155.

Auctions generally have involved the sale of government owned property, such as surplus property sales under 40 U.S.C. § 485(b) and timber sales on National Forest System lands under 16 U.S.C. § 472a; or the leasing of exploration rights by competitive bidding, such as oil and gas land leases under 30 U.S.C. § 226. However, what EPA would be auctioning is neither ownership of government property nor the right to use such property, but rather the right for private industry to continue producing certain chemicals subject to government restrictions. We are unaware of a court decision addressing the case of an auction under such circumstances.

Finally, there is a programmatic issue relating to EPA instituting an auction system inextricably tied to the allocation. Should an auction system be voided by the courts, the allocations based upon the auction would be suspect. This in turn could affect the United States compliance with the requirements of the Montreal Protocol.

CONCLUSIONS

No legislation expressly authorizes EPA to establish the fee or auction system it is exploring. This means that EPA will have to rely on its general regulatory authority under the Clean Air Act or the Toxic Substances Control Act, or the general authority provided by the User Charge Statute. It would be highly speculative to conclude whether EPA is authorized to use such economic measures under current law. However, as previously discussed, EPA faces various fundamental legal issues, some of which have not been definitively resolved by the courts.

The uncertain resolution of the issues we have discussed suggest that legislative action would be a more appropriate course to follow in addressing whether a fee or auction system should be established to capture windfall profits. If Congress believes that the potential for windfall profits, and for adverse effects arising from the current system of allocating production and consumption, should be addressed by the types of economic measures EPA is considering, we believe the Congress should expressly authorize their use. Furthermore, if Congress enacts such legislation, the Congress also might consider earmarking some or all of the funds recovered for research into substitutes for CFCs and halons. We note that earmarking a portion of the funds recovered by the government for special purposes was authorized by the Crude Oil Windfall Profits Tax Act of 1980. Of course, if Congress believes EPA's concerns are without merit, legislation may be needed to prohibit EPA from pursuing economic measures to control CFC and halon production and consumption. A number of bills have been introduced during this Congress to impose economic measures on the production of CFCs and halons.

ARPI AUTOMOTIVE REFRIGERATION PRODUCTS INSTITUTE

Statement of the
Automotive Refrigeration Products Institute
on Pending Legislation
before the Subcommittee on Environmental Protection
# of the Environment and Public Works Committee
United States Senate

May 19, 1989

5100 Forbes Boulevard • Lanham, Maryland 20706 • 301/731-5195

The Automotive Refrigeration Products Institute (ARPI) submits the following statement for the record on legislation pending before the Subcommittee on Environmental Protection of the Senate Environment and Public Works Committee.

ARPI is a national organization representing producers, container manufacturers and packagers of automotive refrigerant. The association was founded in 1983 as a forum to address industry and consumer issues.

ARPI is active on issues such as product safety and environmental protection. Working independently and with government at all levels, ARPI undertakes activities to promote consumer education, product safety standards, development of non-CFC substitutes, CFC emissions reduction, product recycling and sound public policy decisions.

As such, we will confine our comments to legislation pending before the committee which directly impacts our business. We will specifically address S. 491, "The Stratospheric Ozone and Climate Protection Act of 1989," sponsored by Senator Chafee and the Chairman of this Subcommittee, Senator Baucus, and S. 870, "The Consumer Ozone Protection Act of 1989," sponsored by Senator Gore.

We were informed on May 18, 1989 that Senator Jeffords intended to introduce a bill entitled "The Stratospheric Ozone Protection Act." The draft we have seen of this bill shows it to be almost identical to legislation recently passed in the Senator's home state of Vermont. To the extent that comments on the Jeffords bill are relevant and can be made at this time, we will do so in the context of this statement, but we plan to submit more detailed comments on the Jeffords bill after it is officially introduced.

ARPI is supportive of the scheduled phaseout of ozone-depleting chemicals such as CFCs and halons pursuant to the Montreal Protocol, as implemented by the Environmental Protection Agency in its August, 1988 rulemaking. We also strongly support efforts to accelerate this phaseout and encourage development of non-CFC substitutes. As noted above, our membership includes companies that are actively involved in the development of those substitutes.

We view the Montreal Protocol as setting market forces in motion which will drive the development and application of substitutes for all CFCs, including CFC-12, which is the chemical of concern in auto air conditioning. We believe these market forces, combined with a commitment from the Administration to accelerate the phaseout, will drive the fastest possible development of alternatives to ozone-depleting chemicals and, in the interim, will motivate recycling, reclamation and conservative use of CFCs.

Thus we do not believe that legislation at the state or federal level is necessary at this time. However, if Congress and the President feel that enactment of legislation is prudent to stimulate movement toward the development of non-CFC substitutes and products compatible with those substitutes, we caution lawmakers to carefully consider the mandates in legislation and regulation to assure that they do not jeopardize the progress already being made under the Montreal Protocol.

We also caution that, in all cases, action on the federal level is far preferable to action at the state or local level -- protection of the Earth's ozone layer is a global problem that knows no boundaries and requires international cooperation, negotiation and solutions that only the federal government can undertake.

With these caveats in mind, we wholeheartedly support the goals of environmental protection and reduction of ozone-depleting chemicals espoused in the legislation pending before the Subcommittee. Of all the bills related to our issue of auto air conditioning, S. 491, the Chafee/Baucus bill, comes closest to our view of a practical federally-mandated program.

Comments on three specific issues of concern to ARPI and the relevant provisions of the pending bills are outlined below.

I. The Container

Senator Gore's bill, S. 870, and the draft we have seen of Senator Jeffords' bill would prohibit the sale of CFC-12 in containers smaller than 30 pounds and 15 pounds, respectively. This is designed to eliminate the sale of refrigerant in 14-ounce cans, currently the container of choice for consumers who service their own auto air conditioners, and for a majority of the trade sector as well.

A great deal of misinformation has been circulated about the 14-ounce can, based on anecdotal evidence rather than fact.

ARPI believes, and has market data to prove, that indictments of the can are unfounded. A market survey showed that stories about do-it-yourselfers spewing the contents of the can into the air, or routinely dumping can after can into a leaky system are simply not true. To the contrary, the survey showed that do-it-yourselfers are knowledgeable, experienced, and conservative in their use of refrigerant. Furthermore, they are more likely than professionals or consumers who have their auto air conditioners professionally serviced to be aware of the environmental issues surrounding CFCs.

The issue is not the container, it's the contents -- and how those contents are handled. Singling out a particular type of container, or the people who use it, will have no appreciable environmental benefit, but will be costly to consumers and small businesses.

In fact, we view the can as an "environmentally friendly" means of delivery of refrigerant for the following reasons:

- The can is not incompatible with recycling. The can is ideal for controlling volume for precise fills to augment reclamation, recycling and recharging equipment that is currently incapable of dispensing precise fills.
- The can is an appropriate delivery system for small volumes of diagnostic and service compounds, such as leak detectors, lubricants, conditioners and leak checks.
- The can is a crimped, tightly sealed container that is resealable
- The can will be a desirable container for blends with less ozone-depleting potential than CFC-12, and for non-CFC substitutes when they become available.

II. Recycling and Reclamation

As stated above, ARPI believes that the phaseout of CFCs will drive not only the development of substitutes, but a move toward recycling and reclamation as well. We support recycling and reclamation on a voluntary basis, but believe that if it is mandated, the requirements should be targeted at the practice that EPA has identified as contributing the vast majority of CFC-12 emissions to the environment -- intentional venting, which currently is a common practice at professional servicing operations.

This is the approach taken in the Chafee/Baucus bill. ARPI applauds that as a sensible approach and recognition of the true nature of the problem.

By contrast, the Gore bill and the Jeffords draft require reclamation and recycling for any servicing activity. Thus, a customer who only needed to "top off" or add a small amount of refrigerant to the system would be required to pay for unnecessary recycling and recharging of the entire system.

The Gore bill does contain an innovative and interesting concept of allowing service centers to recapture CFC-12, and deliver it to a recycling center for processing. This might be a feasible and practical option for small service centers in rural areas, or even do-it-yourselfers, who do not have on-site access to recycling and reclamation equipment.

To reiterate, ARPI believes that recycling is an important solution to CFC-12 venting, and thinks that more and more service shops will be recycling voluntarily as CFCs become less available and more expensive.

III. Addition of Substances to the Priority List

ARPI is concerned that provisions in the bills to accelerate the phaseout of substances not currently scheduled for elimination, such as HCFC-22, may severely impact the development of blends with less ozone-depleting potential than CFC-12, and thus impair efforts to make an orderly transition from CFCs to non-CFC substitutes.

We urge the Subcommittee to consider carefully the short-term impact of such actions, and the long-term implications for transition to non-CFC substitutes.

IV. Conclusion

We as an industry are committed to consumer education, CFC conservation and other measures to eliminate the 1.7 percent of CFC-12 emissions that EPA attributes to consumer use of the 14-ounce can. (Our market survey indicates that even this small figure is overestimated.)

We are investigating with EPA and other concerned parties the opportunity to modify the package offered to the do-it-yourselfer to further improve the use of the product. We invite any other interested parties to work with us to further our common goals of protection of the Earth's ozone layer and the quality of life that we currently enjoy.

In conclusion, we would like to thank the Subcommittee for the opportunity to comment on pending legislation and offer our views for the record on issues of such vital national and international importance.

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May 9, 1989

The Honorable Max Baucus
Chairman
Subcommittee on Environmental Protection
Committee on Environment and Public Works
United States Senate
SH-706 Hart Senate Office Building
Washington, D.C. 20510-2602

Dear Senator Baucus:

The Association of Home Appliance Manufacturers (AHAM), which represents the majority of manufacturers of refrigerators, refrigerator-freezers and freezers sold in the United States, has an interest in your Committee's May 19, 1989 hearing on pending legislation to control the manufacture, use and disposal of ozone-depleting chemicals. We respectfully request that this letter be included in the official hearing record.

The manufacturers of household refrigerators and freezers are facing a Catch-22 situation.

The very substances they rely upon to produce highly energy efficient refrigerators and freezers -- chlorofluorocarbons (CFC-11 and -12) -- are being phased out through international agreement because CFCs are harmful to the earth's stratospheric ozone layer. And there is international pressure to accelerate the phase out. At the same time, the Department of Energy (DOE) is proposing potentially drastic increases in energy efficiency standards for these basic home appliances.

To illustrate the relationship of efficiency increases to use of CFCs, please note that this industry increased its use of CFC-11 by 55% to achieve the 96% efficiency increase for refrigerators achieved since 1972 and the 77% increase for freezers.

This industry has relied for almost 50 years on CFC-12 as the basic refrigerant gas and more recently on CFC-11 as a blowing agent for foam insulation. Now, it is feared that both of these CFCs are not only harmful to the stratospheric ozone layer, but they also contribute to the greenhouse effect. Appliance manufacturers and CFC producers are committed to phasing out use of these chemicals as soon as is practicable.

However, the reality is that there are no known commercially available substitutes for CFC-11 and -12 with comparable energy efficiency capabilities which do not also potentially contribute to the greenhouse effect.

The Federal law (National Appliance Energy Conservation Act of 1987) already mandates very strict energy efficiency standards for 1990. This industry can meet those standards. What it cannot do is commit right now to meeting higher standards until it knows what the new CFC substitutes will be and what their impact on energy efficiency will be. Once it knows this, it will need time to redesign and retool to mass produce those products. (Keep in mind that we produced nearly 8.6 million refrigerators and freezers this past year.)

In short, the household refrigerator and freezer industry does not know today what it can use to meet new standards tomorrow.

Some people are urging DOE to impose very strict new energy efficiency standards on the industry for 1993, in part to avoid building more electrical generating capacity which may contribute to the greenhouse effect, and, if later the industry finds it cannot meet those standards, then Congress can provide legislative relief.

We do not think this would be fair, sensible or necessary, especially since DOE cannot reverse standards once promulgated.

This industry is actively exploring joint technology development efforts with the Environmental Protection Agency (EPA) and DOE to find the right CFC substitutes and accompanying technologies as soon as possible.

We have every reason to hope, and expect, that higher efficiency levels can be considered and adopted before the end of this century. Should substitutes be found sooner, rather than later, we would expect both the industry and the DOE to come together to review energy efficiency standards.

Lest you think this industry is too cautious, please realize that we are talking about major and revolutionary changes to a product that is found in every U.S. household, a product that Americans consider a daily necessity and have come to expect will safely and reliably store their perishable food for at least 15 years or more. Furthermore, these are products that represent over $3 billion in manufacturer sales -- over 28% of the home appliance industry's total annual sales.

Clearly, time is needed to do the research necessary to find substitutes for CFCs which do not contribute to the destruction of the earth's stratospheric ozone layer, and which do not exacerbate the greenhouse effect.

Thank you for giving us an opportunity to present our views.

Sincerely yours,

Robert M. Gants
Vice President
Government Relations

RMG:bdr

HSIA HALOGENATED SOLVENTS INDUSTRY ALLIANCE
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HSIA STATEMENT BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION OF THE SENATE EVIRONMENT AND PUBLIC WORKS COMMITTEE

Hearing Concerning Pending Legislation To Control Ozone Depleting Substances

Paul A. Cammer, Ph.D.
President

May 19, 1989

EXECUTIVE SUMMARY

- Methyl chloroform is not a CFC. Like the HCFC's and HFC's, its ozone depletion potential is only a small fraction of that of CFC-11. Its global warming potential is even lower than those of the HCFC's.

- Methyl chloroform may be an alternative to CFC-113 in some applications, but not to the other CFC's. However, even total replacement of CFC-113 in all applications worldwide would increase consumption of methyl chloroform by only 10%. That is a totally unrealistic scenario, as methyl chloroform cannot be used in many current CFC-113 applications.

- Where methyl chloroform can be used as a substitute for CFC-113, it results in a currently available 8-fold decrease in ozone depletion potential over CFC-113.

- In the aerospace, electronics, and automotive industries, and in many defense applications, there are no alternatives right now to CFC-113 or methyl chloroform for some products and processes. For other applications there may be alternatives. These alternatives may, however, be more toxic to workers, pose a fire hazard, contribute to smog, or even contribute to global warming through the greatly increased need for power for heating and drying.

- EPA's concern about methyl chloroform is based on a projected 4-fold increase in growth. That is a highly unrealistic scenario for a mature chemical product. Producers and users are increasingly committed to better work practices, better control technology, and greater recycling and reclamation.

- EPA's concern about carbon tetrachloride, on the other hand, may be warranted. Carbon tetrachloride has an ozone depletion potential greater than the CFC's and may be used in dispersive applications in some parts of the world.

- Producers of methyl chloroform throughout the world have initiated a compilation of past production and a study of future demand. Information will be available by the end of the year on which to base sound estimates of growth. Public policy should not be based on worst-case scenarios in the interim.

- Because its ozone depletion potential is less than 1/10,000 that of CFC-11, there is no scientific support for including methylene chloride in measures intended to protect stratospheric ozone.

STATEMENT OF THE
HALOGENATED SOLVENTS INDUSTRY ALLIANCE
BEFORE THE SUBCOMMITTEE ON ENVIRONMENTAL PROTECTION
OF THE SENATE ENVIRONMENT AND PUBLIC WORKS COMMITTEE

Introduction

The Halogenated Solvents Industry Alliance (HSIA) represents the producers and many of the users of methyl chloroform (1,1,1-trichloroethane), and manufacturers of the equipment required for its safe use. Methyl chloroform is a cleaning solvent that is widely used throughout American industry, and is very important in aerospace, electronics, and automotive manufacturing, and in many defense applications. HSIA supports current international efforts to reduce production of the chlorofluorocarbons (CFC's) regulated under the Montreal Protocol on Substances That Deplete the Ozone Layer, and EPA's implementation to date of the Protocol. In particular, HSIA supports efforts to obtain worldwide conformity with the Protocol and worldwide agreement on further CFC reduction as alternative materials with lower ozone depletion potential become available.

At the same time, HSIA is concerned about the implications for American industry of legislation proposed in this Congress that would require unilateral U.S. action to phasedown or phaseout production of methyl chloroform, carbon tetrachloride, and methylene chloride.[1] Similarly, HSIA is concerned about recent steps by the Environmental Protection Agency (EPA) that are apparently intended to discourage domestic use of methyl chloroform. Such steps should not be necessary, as the volume of methyl chloroform emissions is leveling, and improved control technologies and practices are likely to reduce emissions significantly in the future. While it is not a panacea, methyl chloroform should be recognized, along with the CFC alternatives under development, as part of the solution to the problem of modern society's dependence on ozone-depleting CFCs.

HSIA represents some of the users and producers of CFC-113 and carbon tetrachloride, as well as methyl chloroform, methylene chloride, and other chlorinated solvents, and thus is uniquely positioned to observe changes in the markets for cleaning solvents in response to regulatory, technical, and economic developments. This perspective has led to the conclusion that shifts in cleaning processes or materials away from CFC-113 are proving to be difficult in practice in a number of important applications. Indeed, it is widely acknowledged that replacing CFC-113 will be more difficult than replacing the other CFC's.[2] Significant commitments of capital and manpower will be required to develop new cleaning equipment and processes, and such commitments will be forthcoming from the using industries only if they are assured of a continuing supply of alternative materials such as methyl chloroform.

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[1] Because attention has primarily focused on methyl chloroform and carbon tetrachloride, this statement primarily addresses those substances. At the end of this statement, we provide the reasons that methylene chloride has not been seriously considered as a potential ozone depleting substance by either the national or the international scientific community.

Uncertainty as to the availability of alternative technology or materials will delay or preclude investment decisions, thus postponing the transition from CFC's. It is critical that U.S. policy not inadvertently deter development of alternative technologies by threatening to reduce or eliminate supplies of methyl chloroform and the CFC alternatives being developed.

Ozone Depletion Potential

The most promising CFC alternatives at this time include a number of chemicals, primarily compounds known as hydrochlorofluorocarbons (HCFC's) or hydrofluorocarbons (HFC's), that may have some ozone depletion potential (ODP). Exhibit I provides the ODP's of these chemicals, compared to CFC-11, which has been assigned an ODP of 1.[3]

Exhibit I graphically illustrates that there are two distinct categories of substances based on ODP -- those that have ODP's comparable to the CFC's, and those whose ODP's are many times lower. The first category, obviously, includes the CFC's, whose ODP's range from 0.4 to 1.0, and the halons, whose ODP's are greater than that of CFC-11. Exhibit I demonstrates that there is another substance in this ODP category that is not covered by the Protocol -- carbon tetrachloride. Since carbon tetrachloride's ODP is actually higher than that of CFC-11, and because carbon tetrachloride may be used in some parts of the world (although not generally in the United States) in dispersive applications, it is important that it be considered for international control.

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[2] While methyl chloroform is not used in refrigeration or air conditioning or as a blowing agent, it may be a currently available substitute for CFC-113 in certain of its uses.

[3] United Nations Environment Programme (UNEP), The Current Status of Atmospheric Science Concerning the Ozone Layer -- ODP Calculations, UNEP/Ozn.Sc.1/14/Add.2 (Oct. 18, 1988).

The second category includes substances currently being developed as CFC alternatives, substances already in use as CFC alternatives, and methyl chloroform, which may substitute for CFC-113 in some applications and is a raw material for some HCFC's. The ODP's of these substances, which are being addressed as part of the Alternative Fluorocarbon Environmental Acceptability Study (AFEAS), are generally an order of magnitude lower than that of CFC-11.

Exhibit II, which graphically illustrates the atmospheric lifetimes of the same substances, demonstrates the same kind of dichotomy. The CFC's have atmospheric lifetimes ranging from 50 to over 200 years. Similarly, carbon tetrachloride's atmospheric lifetime exceeds 50 years. The other substances, including methyl chloroform, have much shorter atmospheric lifetimes, generally less than 7 years. This generally corresponds to the significantly lower ODP's of these substances.[4]

Exhibits I and II make one point clear -- methyl chloroform and carbon tetrachloride are not comparable in terms of ozone depletion potential or atmospheric lifetime. They should not be linked in the public policy debate as to how best to address stratospheric ozone depletion. Rather, it should be recognized that carbon tetrachloride fits the profile of the CFC's in most relevant respects, while methyl chloroform is appropriately grouped with the HCFC's and HFC's.

It would be unwise public policy to include CFC alternatives in the Protocol or to adopt a phaseout schedule for them at this time. Similarly, it is important that American industry retain the option of using methyl chloroform in those applications where other processes or technologies are technically inferior or raise human health or environmental concerns, or to the limited extent that it may substitute for CFC-113. Moreover, since methyl chloroform is an important raw material in the production of some HCFC's, the ability to phase out reliance on CFC's may depend to some extent on the continued availability of methyl chloroform.

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[4] HFC-143a, the one alternative having a significantly longer atmospheric lifetime, contains no chlorine and thus has an ODP of 0.

Global Warming Implications

As graphically illustrated in Exhibit III, methyl chloroform and other HCFC's and HFC's are different from the CFC's in one other respect -- global warming potential. Indeed, methyl chloroform's global warming potential, estimated at 0.03, is even lower than most of the HCFC's and HFC's. Thus, methyl chloroform does not contribute in any significant way to global warming and the greenhouse effect, an important environmental consideration that is not taken into account by regulatory or market forces at present. As described in more detail below, alternatives to methyl chloroform, such as aqueous cleaning, can have an indirect global warming effect by requiring, for example, the significant additional burning of fuel for energy.

Production and Emissions of Methyl Chloroform

Because the ODP of methyl chloroform is so low and its atmospheric lifetime so short compared to the CFC's, its relative ability to contribute to stratospheric chlorine is significantly smaller. It is doubtful that more than 10 to 15 percent of the methyl chloroform emitted on earth ever reaches the stratosphere. Indeed, EPA's own projections show that unless methyl chloroform emissions grow substantially from current levels, methyl chloroform will not contribute significantly to the total stratospheric chlorine budget.

The question of the need for future international control of methyl chloroform, then, turns largely on the question of whether methyl chloroform emissions are likely to grow in the future. Various growth scenarios have been proposed, including EPA's scenario of 2.5 to 3 percent annual growth until the middle of the next century based on expected growth in the world economy. While methyl chloroform growth over the past decade may have approximated 2.5 percent annually, it is almost certain that this growth rate will not continue into the future. Indeed, growth during the decade of the 1980's was far slower than in the 1970's, when worldwide production of methyl chloroform roughly tripled.

There are several reasons for the declining growth rate. First, methyl chloroform is a mature product, approaching the peak of its life cycle. Demand for commodity chemicals is characterized by a sigmoid curve, with relatively rapid growth of the sort experienced by methyl chloroform in the past two decades followed by a period of relative stability followed by an almost certain decline. This curve has been shown theoretically, and can be predicted using one of several extrapolation techniques.[5] These forecasting techniques are frequently used by chemical producers in deciding whether there is a market need for additional production. Because they indicate that methyl chloroform is a mature product, further investment in new capacity is less likely. This, obviously, limits growth.

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[5] Two types of sigmoid curves -- Logistic and Gompertz -- are frequently used. _See generally_ Luker, B.G., _The Gompertz Curve in Market Forecasting_, British Plastics 108 (Mar. 1961).

The relatively rapid growth of methyl chloroform in the 1970's occurred as users in large numbers substituted methyl chloroform for trichloroethylene. Because methyl chloroform is now used in most of the applications where it could replace trichloroethylene (which continues to have a relatively stable market due to its technical qualities), little future growth is expected from further substitution. It is also very doubtful that methyl chloroform would be used to replace either perchloroethylene or methylene chloride in most of their cleaning applications.

It is possible that some substitution of methyl chloroform for CFC-113 will occur, as users of the latter begin to confront rising prices and the prospect of its unavailability. Even total replacement of CFC-113 in all its applications would result in only a 10 percent increase in total consumption of methyl chloroform worldwide. In practice, that is a totally unrealistic scenario. Methyl chloroform is a stronger solvent than CFC-113, and is incompatible with some ceramic and plastic materials currently used in the electronics industry. In addition, the electronics industry is reviewing its approach to cleaning, including the necessity for cleaning and the possible use of aqueous systems. Hence, it is doubtful that such substitution will add significantly to the demand for methyl chloroform.

At the same time, however, use of a chemical whose

ODP is a small fraction of that of CFC-113, where other alternatives are unavailable or impracticable, would seem to be sound public policy. Every pound of CFC-113 replaced by a pound of methyl chloroform represents an 8-fold reduction in ODP -- a reduction that would be unavailable for years if such substitution were discouraged.

Second, the producers of methyl chloroform are undertaking an effort that will lead to conservation of methyl chloroform in dispersive applications around the world. Components of this effort include commitment to product and environmental stewardship programs, joint efforts to encourage safe use and disposal, and interaction with EPA and other U.S. and foreign regulatory authorities to develop better work practices, encourage use of better control technology, and, where necessary, identify areas where more stringent regulatory controls may be warranted. For example, HSIA has initiated discussions with the Department of Defense aimed at revising cleaning specifications that currently prohibit use of recycled solvent. These efforts, along with the increasing economic and environmental concerns of solvent users, should result in more recycling and reclamation and fewer emissions, which in turn will reduce the demand for virgin solvent. Indeed, an increasing proportion of total methyl chloroform production is being recycled and recovery residuals are being destroyed (e.g., in cement kilns) after use.

Producers of methyl chloroform throughout the world are aware that concerns are being raised about the potential contribution of methyl chloroform to stratospheric chlorine abundance. Following communications with scientific and regulatory authorities in various countries, European, American, and Japanese producers decided to undertake an extensive data collection project to provide reliable information on past production and emissions of methyl chloroform to atmospheric scientists and other interested parties. The results of this project, which will include world-wide production volumes from 1970 to 1988, broken down into three global regions, are expected to be published shortly.

Moreover, partly in response to requests from EPA and German regulatory authorities, the same group of producers has commissioned a study by an independent consulting firm to assess the future global outlook for methyl chloroform use and emissions. This study will take account of trends in each of the major end use sectors in Europe, the United States, and Japan, and will develop forecasts of future demand in the coming decade. When this study is completed, it should provide the most comprehensive analysis available as to future use of methyl chloroform.

Because of the significance of the question of growth of methyl chloroform emissions for future international decision making, it is vitally important that the data and forecasts being developed are reflected in U.S. policy positions. It would be premature to reach a decision as to the need to advocate international action to freeze or reduce production of methyl chloroform before these data and forecasts are available. We anticipate that the historical data will be available by August 1989, and that the global outlook study will be completed by January 1990. As discussed below, it would be even more in appropriate to consider committing the United States to immediate unilateral action.

The free-world producers of methyl chloroform are also attempting to collect information as to dispersive uses of carbon tetrachloride (which is also produced by some of them). While it is almost entirely used as a feedstock or raw material in the United States and Western Europe, anecdotal information suggests that in Eastern Europe, the U.S.S.R., and throughout the less industrialized world, carbon tetrachloride is still used as a solvent and in other dispersive applications. Much of the information as to carbon tetrachloride dispersive uses may be available only through governmental channels. We urge the U.S. government to gather as much information as possible on these uses, as it may be important to reach international agreement to control such emissions.

Implications for Human Health and the Environment

Alternative cleaning systems or materials do not perform well enough technically to replace solvent cleaning (typically with methyl chloroform or CFC-113) in a number of important uses, particularly in the electronics area. In other applications, alternative technologies and materials may be technically adequate. In these applications, however, it is important to take into account the effects of alternative cleaning systems and materials on human health and the environment, as well as efficiency and plant safety.

The health effects of methyl chloroform have been thoroughly evaluated by regulatory authorities throughout the world. EPA's conclusion -- that "[t]he weight of available evidence obtained from both human and animal data suggest that long-term exposure to environmental levels of MC [methyl chloroform] poses no serious health concern to the general population"[6] -- is typical. Similarly, workplace limits imposed by the Occupational Safety and Health Administration (OSHA) and recommended by the American Conference of Governmental Industrial Hygienists (ACGIH) recognize its relatively low toxicity.[7]

Several other factors account for methyl chloroform's popularity. It does not contribute to ground-level smog (ambient ozone), and therefore is particularly valuable in areas such as Southern California where smog precursors cannot be used. It is virtually non-flammable, reducing fire risk and insurance costs to users, and enabling them to comply with local fire prevention codes. The photochemical reactivity and/or flammability of alcohol and petroleum solvents, on the other hand, make them unacceptable in many applications, particularly in Southern California and other areas throughout the United States where smog is a serious health problem. We understand that such concerns may also hinder the widespread use of such alternative solvents as the terpenes. In addition, the health effects of terpenes are currently being reviewed by EPA, due to positive carcinogenicity bioassay results for d-limonene, the largest component of many terpene mixtures.

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[6] Health Assessment Document for 1,1,1 Trichloroethane (Methyl Chloroform), EPA-600/8-82-003F (February 1984), at 1-3.

[7] Both the OSHA permissible exposure limit and the ACGIH Threshold Limit Value are 350 parts per million for an 8-hour time-weighted average. 29 C.F.R. § 1910.1000, Table Z-1; ACGIH, Threshold Limit Values and Biological Exposure Indices for 1988-1989.

Aqueous cleaning, because of the large volume of effluent generated, can add a significant environmental burden in the form of contaminated wastewater discharge. Many small and medium sized painting and cleaning operations could not afford the cost of pre-treatment required for aqueous cleaning discharge. Methyl chloroform and other chlorinated solvents, on the other hand, are increasingly sold under arrangements whereby the distributor or other supplier is responsible for collecting and disposing of the waste material, a type of "cradle-to-grave" system that has long been supported by environmental advocates. In addition, methyl chloroform is much more widely recycled and reused than alcohol or petroleum solvents. Methyl chloroform discharges must by law be stringently controlled[8] and methyl chloroform wastes may not, in general, be land disposed.[9]

Finally, none of the alternatives in use or under consideration have been subjected to the kinds of testing and evaluation that have demonstrated the relatively low toxicity of methyl chloroform. Until testing can be conducted and the results evaluated, it will not be possible adequately to assess the potential risks posed by use of these alternatives in American workplaces.

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[8] Clean Water Act, § 301; 33 U.S.C. § 1311.

[9] Resource Conservation and Recovery Act, § 3004; 42 U.S.C. § 6924.

Energy and Natural Resource Implications

Aqueous cleaning systems have been promoted as alternatives to CFC-113 and chlorinated solvents, and in some applications they may be. It is now becoming widely recognized, however, that such systems require significant energy and power inputs for heating, drying, and the like. Exhibit IV compares energy demands of aqueous and solvent cleaning for a typical metal cleaning application. It shows that aqueous systems can require 5 to 8 times more power than solvent cleaning.

Increased power burdens for an individual operation may be of little significance except to the operator. The aggregate effect on energy resources of a wholesale conversion to aqueous systems, on the other hand, can be quite staggering. A study recently conducted for Skoghall Kemi AB provided the following analysis of such a conversion (from solvent vapor degreasing using trichloroethylene to water-based cleaning systems) throughout Sweden:

> If all solvent vapor degreasers should be charged into aqueous cleaning, the energy consumption

> would be increased considerably. There are 3500 to 4000 plants for solvent cleaning in Sweden. The average power is 30 to 35 kw [per hour]. A change to water would increase the need for energy and power by at least a factor of four. That means an increase of power by at least 420 MW [megawatts]. With an average operation time of 2000 h/y, the energy consumption in Sweden would increase by at least 840,000 MWh.[10]

840,000 MWh is a substantial percentage of the output of a typical Swedish nuclear power plant unit. If, for very rough comparison purposes, the increased energy consumption in Sweden were extrapolated on the basis of gross national product to obtain an estimate of increased energy consumption in the United States, one could project an increased power burden of over 23,000,000 MWh from the across-the-board U.S. conversion of solvent vapor degreasing (primarily with methyl chloroform) to aqueous cleaning. This is more than the total output of 4 typical nuclear units or 7 typical coal-fired power plants in the United States.[11]

Public acceptance of nuclear power plants in the United States has been limited, and the energy and environmental consequences of increased use of fossil fuels, including global warming and the greenhouse effect, are well known. In addition, the enormous additional demand for water associated with aqueous systems must also be taken into account, in areas such as the Western United States where water supplies are sometimes limited. Exhibit V compares water demands of aqueous and solvent cleaning for a typical metal cleaning application.

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[10] Report of Surface Engineering AB, April 27, 1989, at 4.

[11] This comparison assumes an average total annual output of 882 MW for U.S. nuclear power plants (see The Energy Daily, Apr. 21, 1989, at 4), an average total annual output of 500 MW for a typical coal-fired plant, and 70 percent utilization.

Effects on American Competitiveness

Unilateral action by the United States to restrict the availability of HCFC's, HFC's, or methyl chloroform should not be given serious consideration, if disruption of the American economy is to be avoided. Many of the current manufacturing processes in the aerospace and electronics industries (including important defense applications) were developed around the availability of CFC-113 or chlorinated solvents such as methyl chloroform. It is not currently possible to manufacture a full range of products without using CFC-113 or methyl chloroform. Faced with the domestic unavailability of these materials, these industries (many of them considered high-technology) would be likely to move off-shore. Other major trading nations rely heavily on methyl chloroform in, for example, the cleaning of electronic circuit boards and components,[12] and do not regard aqueous cleaning as a practicable alternative at this time. Depriving U.S. competitors in these industries of methyl chloroform could jeopardize U.S. jobs and the U.S. international trade balance, and could conceivably have consequences for national security. It is very important to provide some certainty to domestic industry and to developing countries that methyl chloroform and various alternatives to CFC's will continue to be available. Otherwise, the domestic industry will be unable to make the financial commitment needed to shift away from the CFC's, and developing nations may avoid taking even the first steps to reduce CFC dependence out of fear that alternative technologies will be unavailable to them. Methyl chloroform is a critical ingredient in assuring our continued ability to produce a large number of useful products safely and efficiently, while eliminating reliance on ozone-depleting CFC's.

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[12] Naegele, "Now It's Time to Fix the Sky," Electronics (April 1989), at 96.

Methylene Chloride

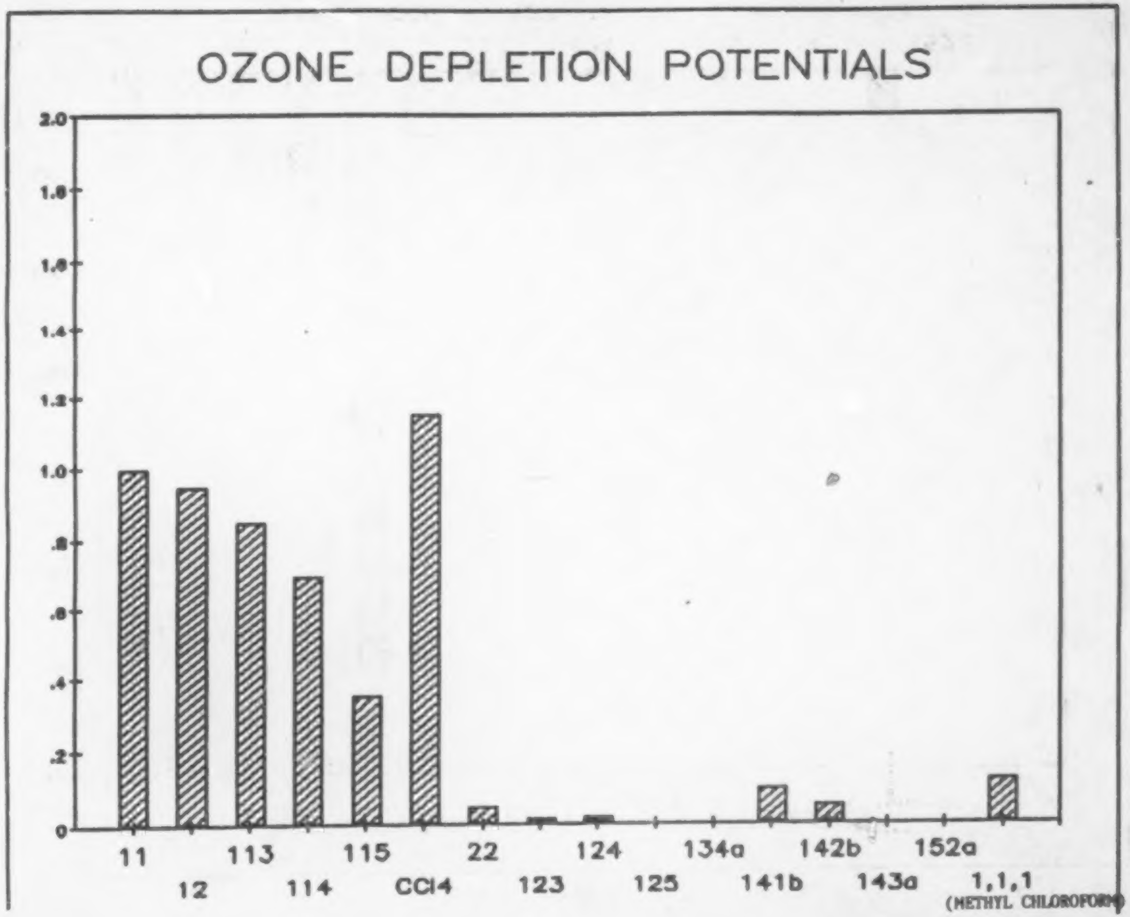
The inclusion of methylene chloride in some of the legislative proposals appears to have been based on an error in transcription. The ODP of methylene chloride is less than 0.001, too small to be reliably measured. It apparently was identified in an early report as having an ODP of 0.01, due to a mistaken placement of the decimal point. We are aware of no credible scientific support for taking international action on methylene chloride, much less for unilateral elimination, as such measures would have no discernible benefit with regard to stratospheric ozone depletion. Such action would have a very clear adverse impact on efforts to protect stratospheric ozone, however, as there is currently some substitution between methylene chloride and CFC-11 in flexible polyurethane foam blowing. Every pound of CFC-11 used instead of methylene chloride in this application represents a 10,000-fold increase in potential ozone depletion. There is no scientific basis for including methylene chloride in measures intended to protect stratospheric ozone.

Conclusion

HSIA urges the Subcommittee:

- Not to consider legislation that would require unilateral U.S. action to phasedown or phaseout methyl chloroform or methylene chloride,
- To recognize that restricting the availability of methyl chloroform would undercut our current ability to lower ODP,
- To ensure that U.S. government positions as to the need for international action concerning methyl chloroform emissions reflect the historical production data and demand information that should be available later this year,
- To see that information as to dispersive uses of carbon tetrachloride is collected as expeditiously as possible, and to encourage international control of carbon tetrachloride if appropriate.

EXHIBIT I



OZONE DEPLETION POTENTIALS

EXHIBIT II

ATMOSPHERIC LIFETIMES

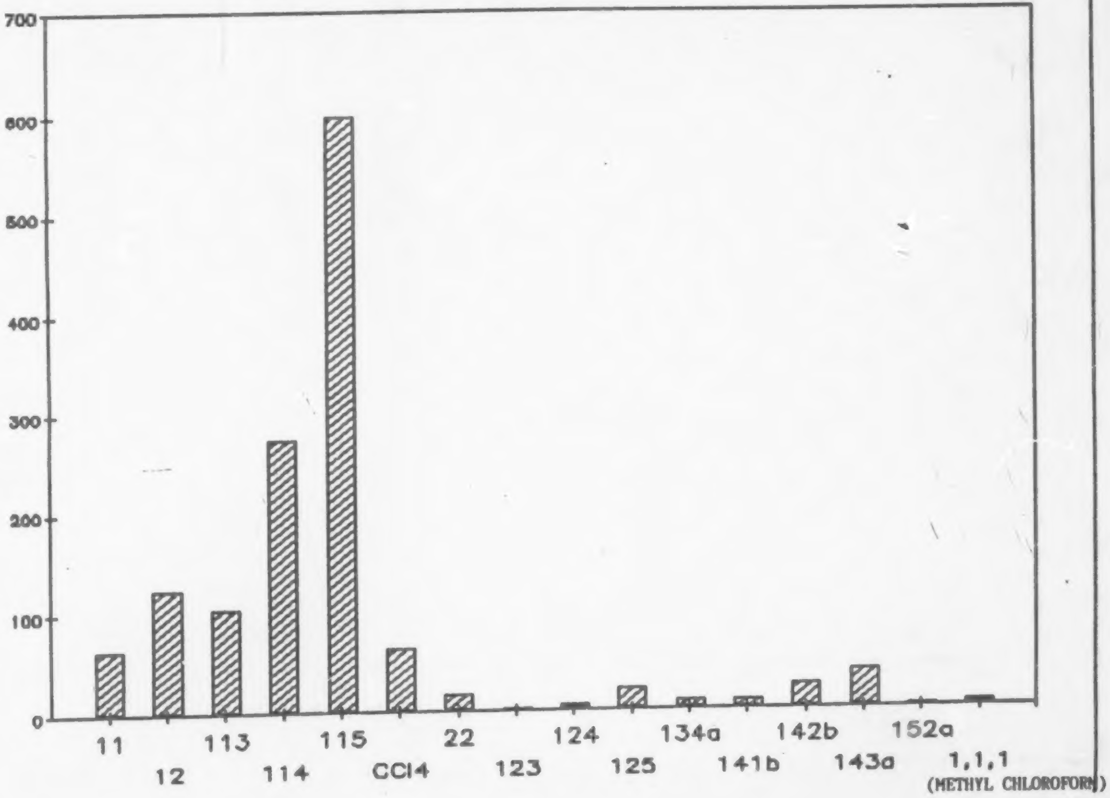


EXHIBIT III

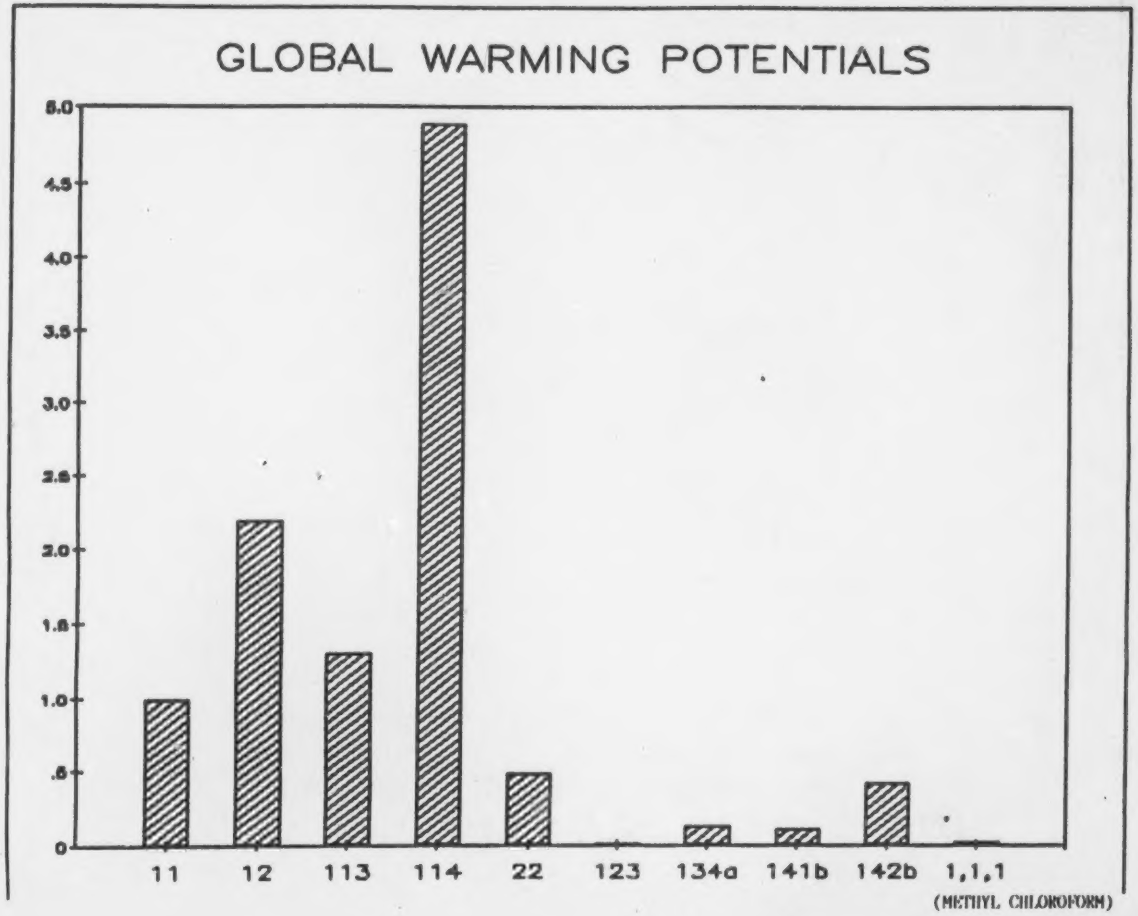
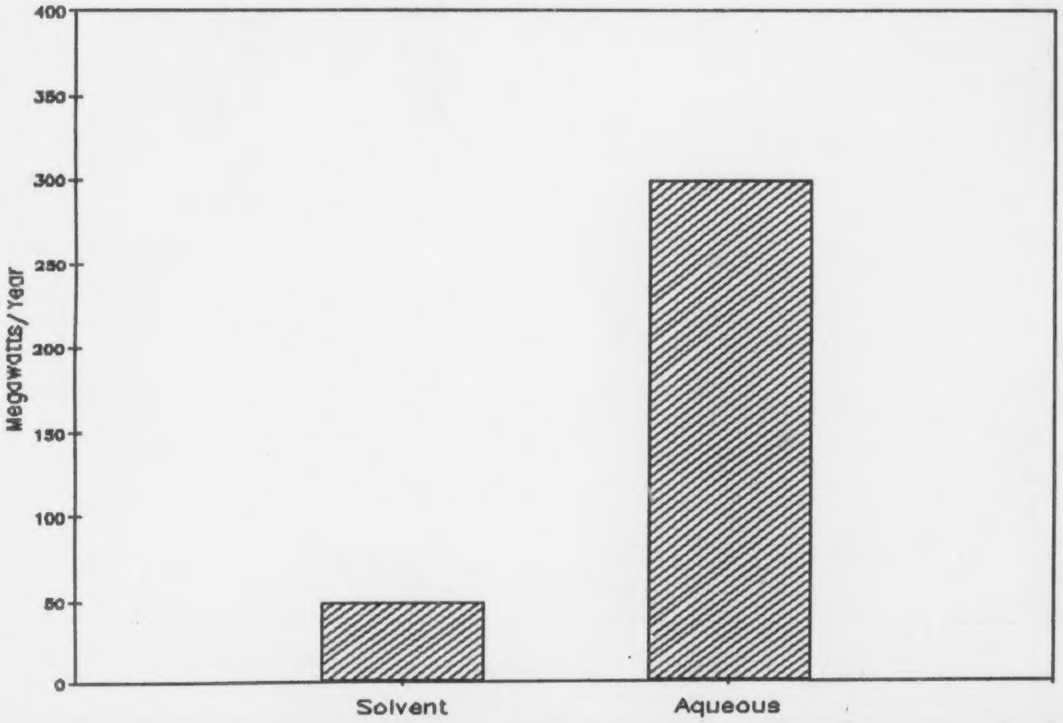

GLOBAL WARMING POTENTIALS
5.0
4.5
4.0
3.5
3.0
2.5
2.0
1.5
1.0
.5
0
11
12
113
114
22
123
134a
141b
142b
1,1,1
(METHYL CHLOROFORM)

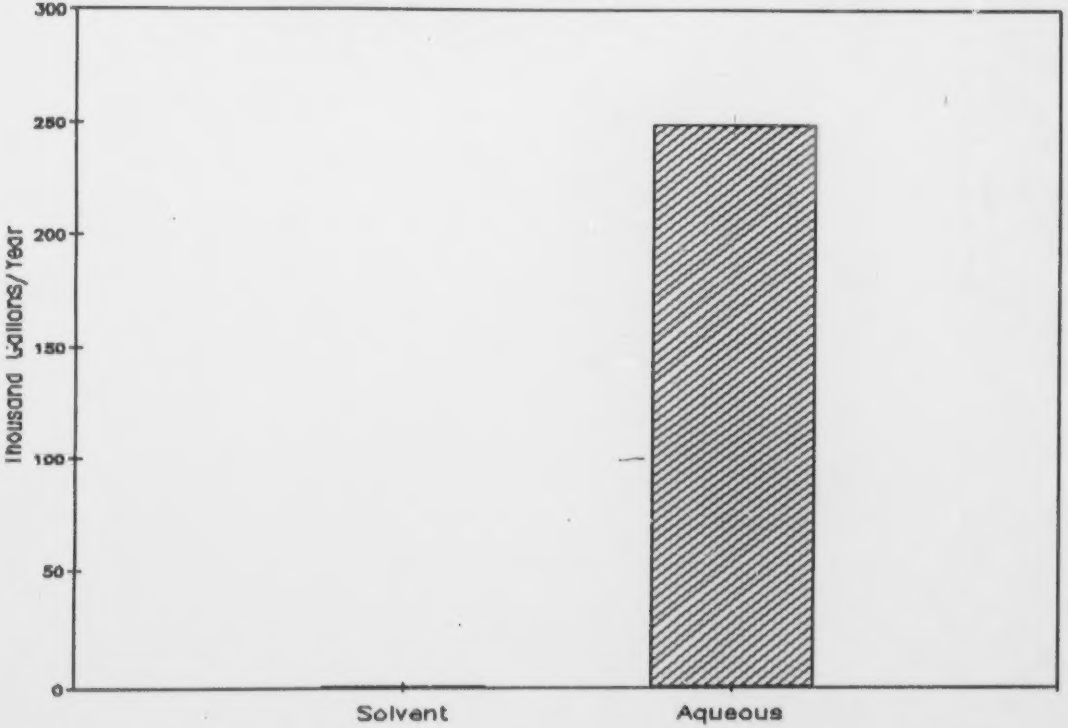
EXHIBIT IV

ENERGY CONSUMPTION FOR METAL CLEANING

(Based on 2500-ton capacity plant operating for 2000 hours per year)



WATER CONSUMPTION FOR METAL CLEANING
(Based on 2500-ton capacity plant
operating for 2000 hours per year)



Comments of the
Motor Vehicle Manufacturers Association
Of The United States, Inc.

Provided to the
Subcommittee on Environmental Protection
of the
Committee on Environment and Public Works

United States Senate

Hearing on the Protection
of the Stratospheric Ozone Layer

May 19, 1989

Comments of the
Motor Vehicle Manufacturers Association
# of the United States, Inc.

Regarding

Phaseout of Chlorofluorocarbons for the Protection of the Stratospheric Ozone

May 15, 1989

The Motor Vehicle Manufacturers Association of the United States, Inc. (MVMA) welcomes the opportunity to share with the Subcommittee the industry's views on current efforts to phase out the use of chlorofluorocarbons (CFCs) in order to protect the stratospheric ozone layer.

MVMA member companies share the concern expressed by the nations of the world regarding the potential for CFCs to deplete the stratospheric ozone layer. We believe that the Montreal Protocol, which established checks and balances to limit the growth of products using or manufactured with CFCs provides the U.S. motor vehicle industry with minimal lead times to phase out the use of CFCs, without placing the industry at a competitive disadvantage during the period that alternatives are developed, tested, commercialized and finally used in our products and processes.

Mobile Air Conditioning Systems

Even before the ratification of the Montreal Protocol, MVMA member companies had already begun to work to determine what changes would be required to redesign present mobile air conditioning systems for use of potential substitute refrigerants. The industry has focused on FC-134a as the most promising near-term substitute, and efforts are underway to develop systems to use this refrigerant.

As we have pointed out previously, "drop-in" substitutes do not yet exist for today's mobile air conditioning systems. The prospective new refrigerant, FC-134a, must be investigated for its environmental and health effects over time before it can be mass produced and introduced into commerce; this process requires adequate leadtime. The new refrigerant also presents significant engineering challenges, both for its production and for its use, which must be met and overcome before FC-134a can be phased fully into production.

Mobile air conditioning system elements that will require redesign and revalidation to permit use of FC-134a include such items as the compressor, the condenser, the evaporator, the system desiccant, the lubricant, and system hoses, fittings and seals. Engineering efforts on each of these elements have met with different levels of success; to date no lubricant candidate has satisfied the full range of lubrication characteristics required in a mobile air conditioning environment. An additional problem is that the FC-134a toxicity test series will not be complete until late 1992. Nevertheless, the limited toxicity testing completed to date seems to indicate that FC-134a has high prospects of passing the full series of toxicity tests. Even though FC-134a cannot be approved for use in automobile air conditioners until the problems just discussed have been resolved, manufacturers are actively working on A/C system design modifications to allow use of refrigerant substitutes.

Blends as Substitutes

Numerous blends have recently been proposed as substitutes for mobile air conditioning refrigerant. None of these blends are "drop-in" substitutes for today's mobile air conditioning systems. These mixtures present many of the same concerns as other potential alternative refrigerants including flammability, desiccant compatibility, lubricant solubility, mixture containment, and material compatibility with systems presently in use. Like substitute refrigerants, these blends require significant engineering effort to evaluate. Many contain compounds that require toxicity testing, which would not be completed until after the FC-134a toxicity tests. Once the engineering efforts on FC-134a begin to decline, the limited resources now devoted largely to solving the problems being encountered with FC-134a can be transferred to investigate blends for in-use systems. Although many blends tend to use a controlled CFC as one of their components, these blends would reduce the in-use mobile air conditioning contribution to the CFC burden during the interim period before an adequate non-CFC substitute is available.

Lead Time Considerations

Today, product planning commitments to achieve timely production for the 1993 model year must be made by year's end 1989. A major modification to these vehicles -- which a substantial redesign of the mobile air conditioning system would represent -- after this release date is an exceedingly expensive proposition that could seriously jeopardize a manufacturer's entire production schedule. Because of the current uncertainties regarding availability of FC-134a in sufficient quantities, a suitable lubricant and the need for further toxicity testing of FC-134a, a commitment to the use of FC-134a for the 1993 model year would be premature. Assuming lubrication and toxicity questions are resolved satisfactorily and within the anticipated time frame, production phase-in could start in model year 1994. A total changeover, however, cannot be completed by a full line manufacturer in a one-year or two-year period because of the number of vehicle models and plant facilities which must be individually re-engineered to incorporate the new mobile air conditioning system (See Figure 1).

Recycling of Refrigerant

Recycling during service is another step leading to reductions in the amount of CFC-12 released to the atmosphere. Efforts to begin recycling continue among several organizations, including U.S. EPA, the Society of Automotive Engineers (SAE), Underwriters Laboratories (UL), the Mobile Air Conditioning Society (MACS), and MVMA. Meetings were held in May, 1989, with the intent to advance finalization of the purity specifications, the equipment and certification protocol, and the methodology to recycle CFC-12 from in-use vehicles. This will be followed by UL testing and approval of recycling units, so that production of UL certified recycling equipment could begin as early as Fall, 1989. If all this goes as planned, and under the most optimistic scenario, it will take at least two and one half to three years to equip all the new car and truck dealerships, engine repair, and air conditioning repair shops, totaling about 200,000, with a recycling machine because of the production capacity restraints of the recycling equipment manufacturers (See Figure 2).

Accelerated Phaseout

Even though the Montreal Protocol only became effective on January 1, 1989 and EPA's production limitations do not become effective until July 1, 1989, international discussions are already underway, which could lead to greater reductions or bans and shorter implementation times than contemplated under the Montreal Protocol. We urge the government to keep in focus the leadtime factor for development and implementation of substitutes as reassessment of the existing Protocol moves forward. Phaseout proposals that do not realistically evaluate the availability of substitutes with acceptable performance and known toxicity, coupled with leadtime estimates from producers and users to commercially implement the new substitute, point towards risking a serious impact on the nation's economy from the chemical producers to the users and, specifically, the domestic automobile industry, its employees and suppliers. Further, even if new systems could be redesigned and placed in production within potentially tighter Protocol requirements, many vehicles that have been produced to operate on CFC-12 refrigerant will still require service maintenance and recharging even after production of vehicles designed to operate on CFC-12 has ceased. Since substitutes are not yet available, bans on CFC-12 without provisions for in-use fleet service might result in significant economic disruptions since people may avoid new purchases of a system with limited service potential.

Other Applications of CFCs

MVMA member companies are taking similar action for the other two CFCs the industry uses and which are regulated by the Montreal Protocol. Automotive flexible foam seats, instrument panel energy absorbing pads and skin-over steering wheels are manufactured with CFC-11 as a blowing agent. Much of this CFC usage is rapidly being replaced by water blown process. However, for certain high-density foam material specifications, CFC-11 must still be used; investigations to find substitutes for these uses continue.

CFC-113 is the other regulated CFC used by the industry. It is a cleaning solvent that is used for parts degreasing and for cleaning of electronic circuits. While substitute solvents have or will replace CFC-113 in the parts degreasing process, substitutes for cleaning electronic circuits, where product reliability is of utmost importance, have not yet been identified. Investigation of aqueous cleaning or use of flux that does not require cleaning continues, but the extent of potential loss of product reliability must be determined before either substitution can take place.

In addition, EPA is currently studying whether it should limit the production and use of carbon tetrachloride and methylchloroform. Manufacturers are studying what impact such limitations would have, as well as the availability of adequate substitutes.

Federal Preemption of State Action on CFCs

As the Subcommittee knows, when EPA published its Final Rule on Protection of the Stratospheric Ozone, 53 Fed. Reg. 30566 (August 12, 1988), the Agency provided its view on federal preemption of state authority to regulate CFCs:

> [S]tates and political subdivisions would be prohibited from adopting any production or import limits not identical to those in EPA's regulation. However, since EPA's regulation only covers the production and importation of CFCs and halons, *state or locally imposed limits, for example, on specific uses would not be precluded by the preemption provision.*
> (53 Fed. Reg. 30566, at 30593) (emphasis supplied)

EPA's position is based on a narrow construction of Section 159(b) of the Clean Air Act, 42 U.S.C. §7459. This narrow view of federal preemption under Section 159(b) appears to conflict with the broad language used by Congress in Section 159(b), which provides in part:

> *If a regulation of any substance,* practice, process, or activity is in effect under this part in order to prevent or abate any risk to the stratosphere or ozone in the stratosphere, *no state or political subdivision thereof may adopt or attempt* to enforce any requirement, respecting the control of any such substance, practice, process, or activity to prevent or abate such risk, *unless the requirement of the state* or subdivision *is identical* to the requirement of such regulation. (emphasis supplied)

Thus, Congress made clear in Section 159(b) that any federal regulations promulgated by EPA in this area preclude any state regulation of the same "substance" to avert the same "risk" unless the standards are "identical." Congress recognized that the only alternative to federal preemption would be a host of varying and conflicting state and local provisions. Despite its narrow interpretation of Section 159(b), EPA recognized that "*concerted action* represents the *only* effective means to safeguard the ozone layer." 53 Fed. Reg. 30566, at 30576 (August 12, 1988).

In addition to preemption under Section 159(b) state and local regulation of CFCs from new motor vehicles and engines may be preempted by Section 209(a) of the Clean Air Act which states:

> No state or any political subdivision thereof shall adopt or attempt to enforce any standard relating to the control of emissions from new motor vehicles or new motor vehicle engines subject to this part. No state shall require certification, inspection, or any other approval relating to control of emissions from any new motor vehicle or new motor vehicle engine as condition precedent to the initial retail sale,

> titling (if any), or registration of such motor vehicle, motor vehicle engine, or equipment.

Thus, with Section 209(a), Congress preempted the entire regulatory field with regard to CFC emissions from new motor vehicles and new motor vehicle engines.

Since the publication of EPA's final rule, however, numerous state and local governments have introduced legislation or regulations concerning the use and recycling of CFC-12 as a refrigerant in automobile air conditioners as well as other uses of controlled CFCs within their state. This year alone more than 70 bills on CFCs have been introduced to date in 18 state legislatures. On May 2, the Vermont Legislature adopted a bill that would ban altogether the registration of cars with air conditioners that use CFCs as a refrigerant beginning with the 1993 model year. More typically, states are considering legislation that requires reclamation and recycling of CFC-12 and prohibits the open-air venting of CFC charges as early as January 1, 1990.

While MVMA member companies strongly support efforts to reclaim and recycle CFC-12 and to provide guidelines for environmentally sound methods of servicing automobile air conditioning systems, such efforts must be accomplished on a consistent nationwide basis. MVMA member companies have worked closely with EPA in a voluntary effort to develop guidelines and specifications for recycling equipment and operations. In its August 1988 "Advanced Notice of Proposed Rulemaking on Protection of its Stratosphere Ozone," 53 Fed. Reg. 30604 (hereinafter ANPRM), EPA states that it intends to continue its close monitoring of this voluntary effort and "to develop mandatory regulations requiring recycling in all service shops by 1992 if near-term progress toward the use of recycling . . . does not occur." (53 Fed. Reg. at 30616.) MVMA member companies believe that EPA's target for having reliable recycling equipment and procedures in place by 1992, even though optimistic, is more realistic than the earlier deadlines proposed by various state and local governments. MVMA is specifically concerned that uniform standards be accepted to ensure the reliability of recycling equipment and procedures and that adequate leadtime is provided for recycling equipment to be manufactured and distributed to local service stations and for integration of air conditioners that operate on substitute refrigerants into the production planning schedules of automobile manufacturers.

With respect to continued use of CFCs in mobile air conditioners, as well as other uses of controlled CFCs under the Montreal Protocol and the EPA's final rule, MVMA is concerned that control strategies provide an orderly and cost-effective transition of products and processes to safe and adequate substitutes once they have been identified and become available. As discussed in more detail above, drop-in substitutes do not yet exist for the CFCs controlled under the Montreal Protocol. Although a prospective new refrigerant (FC-134a) has been identified for today's mobile air conditioning systems, it must be further investigated before it can be mass produced and introduced into commerce. In its ANPRM, the EPA recognized the need for appropriate lead time for developing safe substitutes. In considering DME-12 as a potential CFC substitute in mobile air conditioners, for example, the EPA recognized that mandating such a substitute must await "additional tests...underway [to] provide that it can be used in existing auto air conditioning systems." (ANPRM at 30616.)

Unfortunately, state and local governments acting independently tend to adopt different approaches to regulating automobile air conditioners and different implementation schedules, many of which may not recognize the lead time necessary to develop acceptable CFC substitutes and the equipment and processes that use them. It is simply not practical for manufacturers to meet 50 or more different sets of state and local regulations. A uniform coherent and consistent strategy for the control of CFCs better serves the public interest by eliminating costly and inefficient conflicts between various state and local requirements. Notwithstanding the very legitimate and genuine concerns state and local governments have in protecting their citizens from the hazards of stratospheric ozone depletion, the global nature of the stratospheric ozone depletion problem makes uncoordinated local action economically costly and utterly ineffective. Insofar as effective responses to the problem require coordinated global action, governmental action at the federal level is the most appropriate way to respond to the need for CFC regulation within the United States.

Therefore, MVMA member companies urge the Subcommittee to encourage EPA to re-examine its position on federal preemption of state authority to regulate CFCs. Should EPA fail to do so, we request the Subcommittee to further examine the need for and scope of federal preemption of local regulation of CFCs and to take appropriate congressional action.

Summary

In summary, MVMA member companies share the nation's desire to respond to the ozone depletion problem, and support the Montreal Protocol. All member companies are working with EPA, SAE, UL and MACS on a recycling program that will not void the air conditioning warranty and that will minimize the release of CFC-12 during engine and/or mobile air conditioning repair. MVMA member companies are also phasing out CFCs as safe substitutes become available for foam blowing agents or as a parts degreasing solvent. At the present time, based on what is known about substitutes for CFC-12, it appears that a complete phaseout of that refrigerant is not yet possible because of requirements for aftermarket service. Similarly, a totally satisfactory means to eliminate CFC-113, which is required for cleaning of electronic circuit boards, is not yet available. Regarding an alternative to CFC-12, all member companies are actively working towards the introduction of FC-134a in their mobile air conditioning systems. Any unilateral acceleration of the Protocol schedule could place MVMA member companies at a competitive disadvantage. At this time, blends are not a long-term solution; in-depth consideration of these potential substitutes only tends to slow down development of FC-134a because of resource constraints.

FIGURE 1

FC-134a TIMETABLE

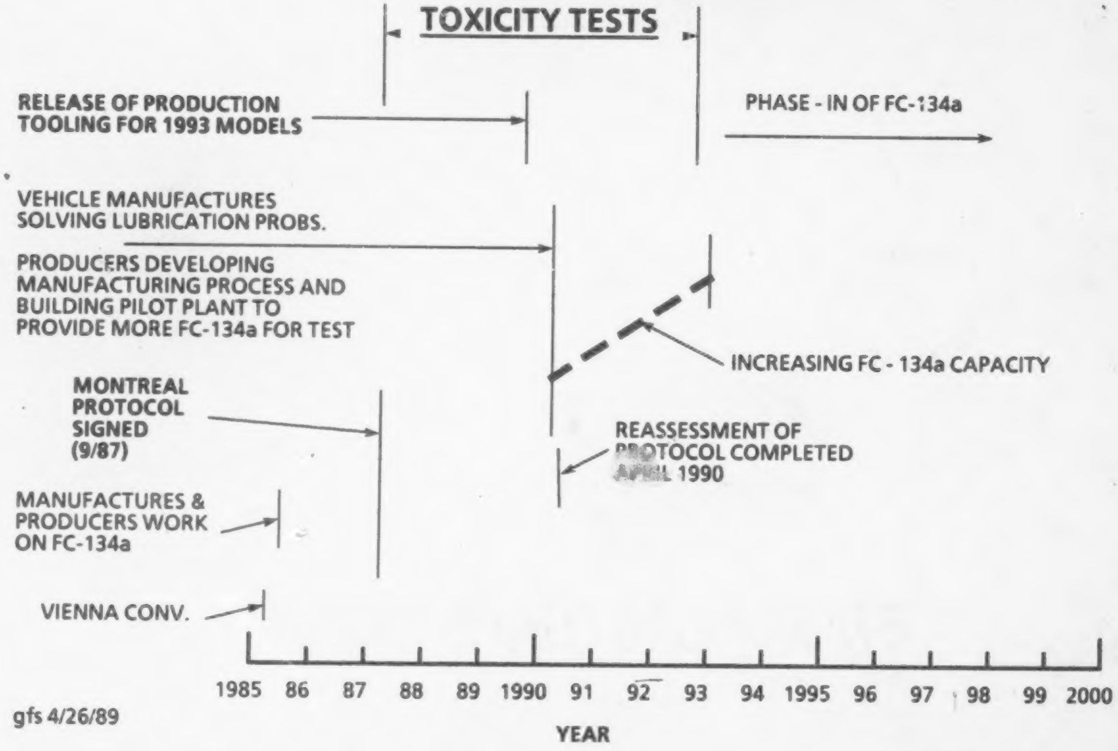


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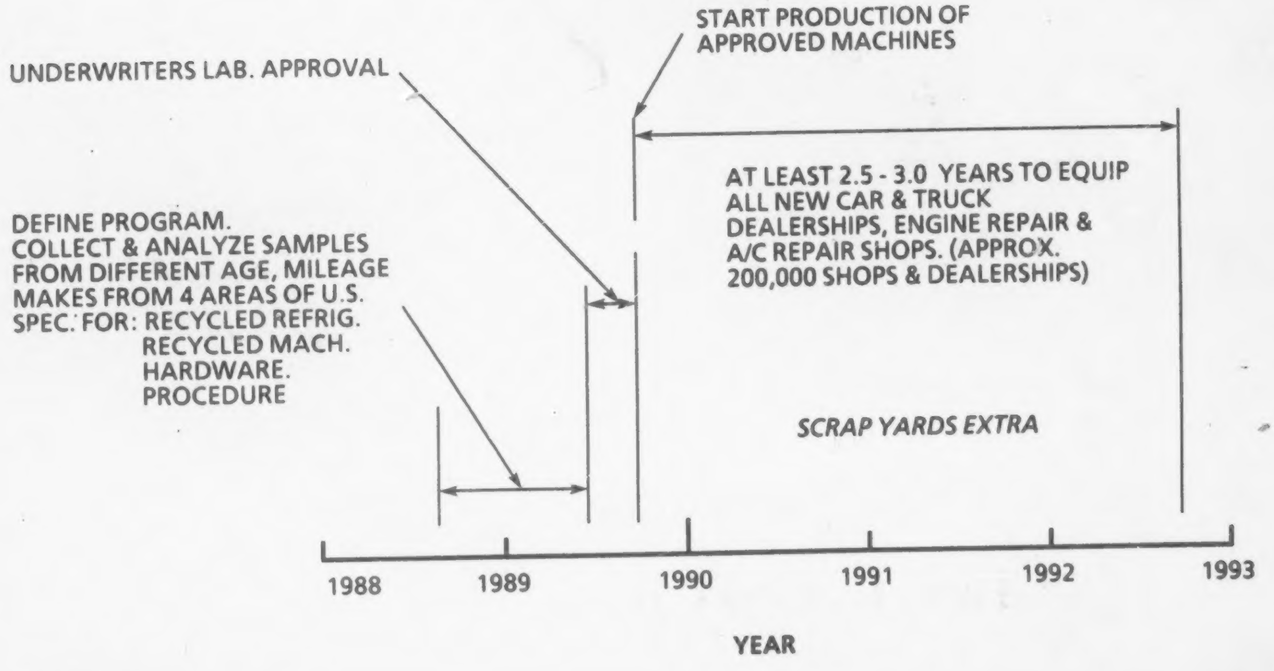
FIGURE 2

RECYCLING / RECLAIMING


UNDERWRITERS LAB. APPROVAL
START PRODUCTION OF APPROVED MACHINES
DEFINE PROGRAM.
COLLECT & ANALYZE SAMPLES FROM DIFFERENT AGE, MILEAGE MAKES FROM 4 AREAS OF U.S.
SPEC. FOR: RECYCLED REFRIG.
RECYCLED MACH.
HARDWARE.
PROCEDURE
AT LEAST 2.5 - 3.0 YEARS TO EQUIP ALL NEW CAR & TRUCK DEALERSHIPS, ENGINE REPAIR & A/C REPAIR SHOPS. (APPROX. 200,000 SHOPS & DEALERSHIPS)
SCRAP YARDS EXTRA
1988
1989
1990
1991
1992
1993
YEAR

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101st CONGRESS
1st Session

S. 201

To respond to the global environmental degradation brought on by human activities by reversing the trends that are presently altering or destroying vast portions of the biosphere, and to ensure that United States policies provide for the protection of the world environment from future degradation, and for other purposes.

IN THE SENATE OF THE UNITED STATES

January 25 (legislative day, January 3), 1989

Mr. Gore (for himself, Mr. Boschwitz, Mr. Lieberman, Mr. Hollings, Mr. Wirth, Mr. Simon, Mr. Kerry, Mr. Reid, Mr. Bryan, and Mr. Sasser) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To respond to the global environmental degradation brought on by human activities by reversing the trends that are presently altering or destroying vast portions of the biosphere, and to ensure that United States policies provide for the protection of the world environment from future degradation, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE; TABLE OF TITLES.

(a) Short Title.—This Act may be cited as the "World Environment Policy Act of 1989".

(b) TABLE OF TITLES.—

TITLE I—ESTABLISHMENT OF THE COUNCIL ON WORLD ENVIRONMENTAL POLICY

TITLE II—RESEARCH, DEVELOPMENT OF POLICY RESPONSES, AND PROMOTION OF PUBLIC AWARENESS

TITLE III—REGULATION AND PHASE-OUT OF ANTHROPOGENIC EMISSIONS THAT DEGRADE THE ENVIRONMENT

TITLE IV—VEHICLE FUEL EFFICIENCY IMPROVEMENTS

TITLE V—WASTE MINIMIZATION AND RECYCLING

TITLE VI—THE WORLD BANK AND SUSTAINABLE ECONOMIC DEVELOPMENT

TITLE VII—ASSISTANCE TO INTERNATIONAL FAMILY PLANNING ORGANIZATIONS

TITLE VIII—CONSERVATION OF WORLD BIODIVERSITY

TITLE IX—REPLANTING AND CONSERVING THE WORLDS FORESTS

TITLE X—INTERNATIONAL COOPERATION

SEC. 2. FINDINGS.

The Congress finds that—

(1) the Earth is a fragile planet, with a thin blanket of air, a thinner film of water, and the thinnest veneer of soil to support a web of life;

(2) the Earth is a system whose component parts—atmosphere, oceans, rocks and soils, glaciers, and all plant and animal life—may be studied in isolation, but can never be fully understood in the limited context of disciplinary scientific domains;

(3) global biological and chemical processes can have profound influences on Earth's climate and on the land and aquatic biospheres, which in turn can affect those processes themselves;

(4) a better, more fundamental understanding of the structure and functioning of the Earth's natural systems and the forces that interconnect or change them is widely regarded as essential to ensuring the Earth's future habitability;

(5) we must broaden our typically compartmentalized approach to a global, comprehensive, long-range view, embracing a much wider range of knowledge about the present functioning of the atmosphere, ocean, and solid earth; and

(6) likewise, we must coordinate our national policies, both domestic and international, to promote a comprehensive, long-range view that ensures that United States policies do not contribute to the environmental degradation of Earth.

The Congress finds that the following are widely accepted by the scientific community—

(1) global changes in Earth's geosphere, biosphere, and atmosphere might be induced by increasing concentrations of certain gases in the atmosphere that can alter its chemical balance and its heat budget;

(2) such alterations could cause rapid changes in Earth's climate, as well as deplete Earth's protective stratospheric ozone shield; and

(8) furthermore, economic development activities around the world are polluting and degrading ecosystems, threatening mass extinction and destruction of forests, wetlands, alpine regions, and other ecosystems critical to the Earth's environmental balance

The Congress therefore concludes that—

(1) human activities are altering our global environment in unprecedented ways that we are barely able to comprehend, with consequences for human health and quality of life, national economies and infrastructure, and managed and unmanaged ecosystems;

(2) the power of new technologies for exchanging and processing scientific information, and for remote sensing of atmospheric, geological, biological, and oceanographic properties, promises to revolutionize our grasp of global environmental conditions and aid in identifying the causes of global change and predicting the consequences; and

(3) the United States must undertake the development of policies that halt human-induced global change, and assist in the restoration of degraded portions of the world environment.

TITLE I—ESTABLISHMENT OF THE COUNCIL ON WORLD ENVIRONMENTAL POLICY

SEC. 101. FINDINGS.

The Congress finds that:

(1) Problems of the global environment, including changes in climate, depletion of the stratospheric ozone layer, loss of biodiversity and ecosystems (epecially tropical rainforests), disposal of wastes, and acidification of the biosphere, must command the coordinated attention of the United States at both domestic and international levels.

(2) Although global processes change naturally over geologic timescales, the rate and magnitude of change has been radically accelerated by human activities.

(3) Although our understanding of global change warrants a range of immediate policy actions, mankind will benefit from a better understanding of global change in four distinct areas—

(A) quantification of the amount of pollution effluent that is resulting from human activities;

(B) the effect of that effluent on altering natural global processes, including global climate systems;

(C) the impacts that human-induced changes in those natural global processes are having on the world environment, and

(D) the policy responses necessary to effectively halt human activities that are causing global change, and the feedback of those policies on the rate and magnitude of change.

(4) Global change scientific research is being coordinated by the Committee on Earth Sciences of the Federal Coordinating Council on Science, Engineering, and Technology, within the Office of Science and Technology Policy (hereafter referred to as the "Committee").

(5) To maximize the benefit of this scientific research effort there must be a parallel policy research effort, that should provide domestic and global policy recommendations based on current scientific understanding, which will evolve in accordance with future gains in scientific understanding of global processes.

(6) A coordinating council, located in the Executive Office of the President, is required to oversee the design and implementation of strategies to develop policy responses to world environmental problems.

SEC. 102. ESTABLISHMENT AND TRANSFER OF FUNCTIONS.

(a) Within ninety days after the date of enactment of this Act, the President shall establish in the Executive Office of the President a Council on World Environmental Policy (hereafter referred to as the "Council").

(b) The Council shall replace the existing Council on Environmental Quality (42 U.S.C. 4341 et seq. and 42 U.S.C. 4371 et seq.). Upon establishment of the Council, the Council on Environmental Quality shall terminate and all the duties, authorities, and functions exercised by the Council on Environmental Quality as of the date of enactment of this Act shall be transferred to the Council on World Environmental Policy. In addition, the Council shall carry out the duties and functions as specified in section 103 of this Act.

(c) The Council shall be chaired by the Administrator of the Environmental Protection Agency. Two additional members shall be appointed by the President, with the advice and consent of the Senate. Each member shall be a person who, as a result of their training, experience, and attainments, is exceptionally well qualified to analyze and interpret global environmental trends and information; to appraise programs and activities of the Federal Government; and to formulate and recommend national and international policies to promote the improvement of the quality of the world environment.

(d) The Secretary of State, Secretary of the Interior, Secretary of Commerce, Secretary of Defense, Secretary of

Energy, Secretary of Transportation, Secretary of Agriculture, Secretary of Health and Human Services, the Director of the Office of Management and Budget, the Administrator of the National Aeronautics and Space Administrator, the Director of the National Science Foundation, and the Director of the President's Office of Science and Technology Policy shall serve as ex officio members of the Council.

SEC. 103. DUTIES AND FUNCTIONS.

In addition to the current responsibilities of the Council on Environmental Quality as specified in the National Environmental Policy Act of 1969 (42 U.S.C. 4344), the Council shall have each of the following duties and functions:

(1) The Council shall develop, update every three years, and transmit to the President and the Congress, a Strategic Plan (hereafter referred to as the "Plan") for coordinating policy responses to world environmental problems, commensurate with and parallel to scientific research coordinated by the Committee on Earth Sciences, the Office of Science and Technology Policy, ensuring that such policy responses—

(A) are effectively coordinated among all Federal agencies, among all United States-supported bilateral and multilateral aid institutions (including, but not limited to, the United States Agency for International Development, the World

Bank, and the Interamerican Development Bank), and

(B) are directed toward maximum protection of the world environment.

(2) The Council shall advise the President on the effects of United States policy, both foreign and domestic, on world environmental problems, including, but not limited to, the problems of climate change, depletion of the stratospheric ozone layer, acidification of the biosphere, loss of biodiversity, global deforestation, global overpopulation, and the minimization, disposal, and cleanup of industrial, agricultural, and residential waste products.

(3) The Council shall develop and publish an annual report detailing the Nation's progress toward meeting the goals laid out in the Plan, and making recommendations for changes or additions to those policies.

(4) The Council shall develop a Policy Response Plan, to proceed in parallel with the scientific research plan of the Committee utilizing information it shall receive from the Committee regarding new scientific understanding of global change to update its recommendations for national and international policy responses to global change.

(5) The Chairman of the Council shall advise on an annual basis the President and the Congress concerning the state and adequacy of United States policies in all areas important in addressing world environmental problems.

(6) The Council shall develop guidelines and appropriate criteria to be implemented by all Federal agencies to minimize, to the maximum extent feasible, the impact of Federal policies on the world environment, including the review of all proposed Federal regulations, that are submitted to the Office of Management and Budget for review, for their effect on international environmental quality.

SEC. 104. CHAIRMAN'S REPORT TO THE NATION.

Notwithstanding any other provision of law or any rule, regulation, or policy directive, the Chairman may transmit to the President, the Congress, or the general public of the United States, by report or testimony, or otherwise, information and views about any Federal policies which, in the opinion of the Chairman, retard the progress of the United States in reaching the goals laid out in the strategic plan outlined in section 103 of this Act, or other matters relating to the provisions of this Act, without review, clearance, or approval by any other administrative authority.

SEC. 105. SUPPORT STAFF.

The Chairman shall appoint such staff to the Council as shall be necessary to accomplish the purposes of this Act. Such staff shall not concurrently serve as full- or part-time officers of any other agency of the Federal Government.

SEC. 106. AMBASSADOR AT LARGE FOR THE ENVIRONMENT.

After consultation with the Chairman and the Secretary of State, the President may appoint an Ambassador to represent the United States in negotiations relevant to global environmental issues. The Secretary of State may designate this Ambassador to be the official representative of the Secretary to the Council.

TITLE II—RESEARCH, DEVELOPMENT OF POLICY RESPONSES, AND PROMOTION OF PUBLIC AWARENESS

SEC. 201. FINDINGS.

The Congress finds that—

(1) in order to improve coordination of national and international scientific research efforts with commensurate policy development, and to recommend national policies that are sensitive to scientific understanding of the Earth system and the effect of changes in that system on the environment, the climate, and human well-being, a multiyear program of policy review and revision is required;

(2) both the global change scientific research and policy response programs must receive guaranteed funding over their multi-year duration, and Federal coordination of the effort must be carried out within the Executive Office of the President;

(3) the strategic plan for the United States Global Change Research Program, to be developed in 1989 by the Office of Science and Technology Policy, shall be used by the Council on World Environmental Policy (CEWP), established under title I of this Bill, in order for the Council to implement a parallel United States Program for Policy Responses to Global Change. CWEP shall issue annual reports to the Congress, the first to be delivered no later than March 1, 1991, with subsequent reports delivered no later than March 1 of the following years. Those annual reports shall provide an assessment of:

(A) policy-relevant scientific findings from the United States Global Change Research Program;

(B) progress in addressing key uncertainties in the global climate models; and

(C) policy updates and recommendations based on the best available scientific understanding of global change.

SEC. 202. UNITED STATES FOR THE INTERNATIONAL GEOSPHERE-BIOSPHERE PROGRAM.

It is the sense of Congress that—

(1) the United States should participate in and give full support to the International Geosphere-Biosphere Program (IGBP), whose objective is to describe and understand the interactive physical, chemical, and biological processes that regulate the total Earth system, the unique environment that it provides for life, the changes that are occurring in this system, and the manner in which they are influenced by human actions; and

(2) the President should periodically, but not less than biennally, transmit to the Congress a plan describing the program for participation of the United States in the International Geosphere-Biosphere Program.

SEC. 203. SUPPORT FOR RESEARCH ON THE ROLE OF THE ARCTIC, ANTARCTICA, AND TROPICAL FORESTS IN GLOBAL CHANGE.

The Congress finds that—

(1) the polar regions of the Arctic and Antarctica are a focus of attention in connection with global climate change because of:

(A) growing evidence that the polar regions play a key role in the physical processes responsible for global climatic fluctuations and in some cases may be a prime mover in such fluctuations;

(B) widening appreciation of the polar regions as a natural repository of information about past climatic fluctuations and about past Earth-environmental events causally related to climatic fluctuations; and

(C) mounting concerns that future changes in climate may disturb the equilibrium of polar ice masses and hence global sea levels;

(2) the Antarctic region, including the continent and the Southern Ocean, is a critical area in the study of global change. Major interactions between the atmosphere, ice, ocean, and biota of the Antarctic region affect the entire global system through feedbacks, biogeochemical cycles, deep-ocean circulation, and changes in ice mass. The effects of global climate change in Antarctica can be larger and more pronounced than at mid-latitudes, and therefore better seen and monitored. Antarctica is also a rich repository of paleo-environmental information in its ice sheet, and ocean and lake sediments;

(3) the United States should support the development of an Antarctic research component to the IGBP, and that the Antarctic research component should in-

clude the recommendations prepared by the ad hoc Scientific Committee on Antarctic Research (SCAR) of the International Council of Scientific Unions (ICSU). These recommendations are presented in the report of the SCAR Steering committee for the IGBP, at XX SCAR, Hobart, Tasmania, on 5–16 September 1988. The recommendations identify four interdisciplinary research themes within which priorities for the Antarctic research component should be established—

(A) detection of changes of global importance best observed in Antarctica, which are fundamental to establishing current trends of change and provide a foundation for understanding the underlying processes;

(B) study of processes linking the Antarctic sea ice, ice cap, and biological systems, to the global ocean and atmosphere, which quantify Antarctica's relevance to global change and human activity;

(C) use of paleoenvironmental information from Antarctic sources, which provide a context for interpreting current changes on the ten to one hundred year time scale of principal concern to IGBP; and

(D) study of ecology in the changing Antarctic environment, which assesses the impacts of climate on Antarctic biota, and their possible feedback effects on climate;

(4) the tropical forests are vast repositories of carbon, and as significant components of the global carbon cycle, may play an important role in mitigating the buildup of carbon dioxide, the most abundant greenhouse gas. In addition, the tropical forests play a fundamental role in the global water cycle, with important consequences for precipitation patterns in nearby regions. The role of tropical forests in global and regional processes must be better understood and quantified.

SEC. 204. SUPPORT FOR MISSION TO PLANET EARTH.

The Congress finds that—

(1) the National Aeronautics and Space Administration initiative, Mission to Planet Earth, is a great and important initiative, because of its fundamental importance to humanity's future;

(2) the initiative directly addresses the problems that will be facing humanity in the coming decades, and its benefits are clear to a public that is increasingly concerned about global environmental problems;

(3) for these reasons, the initiative should enjoy sustained public and congressional support and interest. The United States is the only country currently capable of leading a Mission to Planet Earth, but the program is designed to include participation by the European Space Agency (ESA) and the Japanese National Space Development Agency (NASDA), and thus requires international cooperation. The initiative therefore represents an important opportunity for the United States to exercise leadership in an increasingly significant area; and

(4) the National Aeronautics and Space Administration will be the lead United States Federal agency in the initiative. The National Science Foundation, and the National Oceanic and Atmospheric administration will play important roles, and international cooperation through the Department of State will be required.

SEC. 205. DESIGNATION OF 1990 AS THE "INTERNATIONAL YEAR OF THE GREENHOUSE EFFECT".

It is the sense of Congress that—

(1) the United States should promote and support—

(A) domestic and international research efforts with respect to the greenhouse effect and its impact;

(B) research and development of technologies that reduce or eliminate greenhouse gas emissions, and development of policies that promote the introduction of such technologies nationally and internationally; and

(C) efforts to prevent adverse environmental effects resulting from greenhouse warming;

(2) the President should take all appropriate actions, in cooperation with any international organization which the President determines to be appropriate, to establish a long-term, cooperative, international program for the decade of the 1990's with respect to the greenhouse effect with the purposes of—

(A) increasing the worldwide dissemination of information with respect to the causes of the greenhouse effect;

(B) fostering cooperation among nations to develop more extensive research efforts with respect to the greenhouse effect, including support for research conducted through the World Climate Program and the International Geosphere-Biosphere Program;

(C) promoting the transfer of technologies that reduce or eliminate greenhouse gas emissions, with special emphasis on introducing such technologies to the developing world;

(D) identifying the potential alternative policies necessary to avoid a buildup of greenhouse gases to levels which could have catastrophic results; and

(E) preparing timely reports on the accomplishments of the program;

(3) any such program established by the President should be started before the calendar year 1990 and the one-year period beginning January 1, 1990, shall be known as the "International Year of the Greenhouse Effect"; and

(4) the participation of the United States in any such program established by the President should be planned and coordinated on behalf of the United States by the Secretary of State, the National Research Council, and the Federal Coordinating Council for Science, Engineering, and Technology.

TITLE III—REGULATION AND PHASE-OUT OF ANTHROPOGENIC EMISSIONS THAT DEGRADE THE ENVIRONMENT

PART A—PHASE-OUT OF SUBSTANCES THAT DEPLETE THE STRATOSPHERIC OZONE LAYER

SEC. 301. FINDINGS.

The Congress finds that—

(1) the best available scientific evidence shows that manufactured substances, including chlorofluorocarbons, are polluting the atmosphere and destroying stratospheric ozone, as well as contributing to global climate change, and other atmospheric modifications;

(2) no level of stratospheric ozone depletion or global climate change caused by human activities can be deemed safe;

(3) stratospheric ozone depletion will lead to increased incidence of solar ultraviolet radiation at the surface of the Earth;

(4) increased incidence of solar ultraviolet radiation will cause increased rates of disease in humans (including skin cancer), threaten food crops, and otherwise damage the natural environment;

(5) stratospheric ozone depletion and global climate change from continued emissions of chlorofluorocarbons and other halogenated carbons with ozone de-

pleting potential, and emissions of other gases, imperil human health and the environment worldwide;

(6) in order to stabilize and eventually reduce concentrations of chlorine and bromine in the stratosphere, to conserve the stratospheric ozone layer (an exhaustible natural resource), and to reduce the extent of global climate change—

(A) emissions of chlorofluorocarbons and other substances covered by this Act, including halogenated carbons with ozone depleting potential, should be terminated rapidly, and

(B) it is necessary to control international trade in substances covered by this Act and products containing or made with processes that use such substances;

(7) the highest priority must be given to developing and deploying safe substitutes to replace ozone depleting substances within six years; and

(8) The United States needs to develop and deploy safe substitutes to replace ozone depleting substances in order to demonstrate to the world its commitment to protect the stratosphere.

SEC. 302. OBJECTIVES AND NATIONAL GOAL.

(a) The objectives of this Act are to restore and maintain the chemical and physical integrity of the Earth's atmosphere and to protect human health and the global environment from all known and potential dangers due to atmospheric or climatic modification, including stratospheric ozone depletion, that is or may be related to the chlorofluorocarbons or other substances covered by this Act by—

(1) reducing significantly the production and emission into the atmosphere of pollutants caused by human activities, and

(2) promoting the rapid development and deployment of alternatives to the use of the chlorofluorocarbons and other substances covered by this Act.

(b) In order to achieve the objectives of this Act, it is the national goal to eliminate atmospheric emissions of manufactured substances with ozone depleting potential, including chlorofluorocarbons and other halogenated carbons with ozone depleting potential, and to reduce significantly emissions of other gases caused by human activities that are likely to affect adversely the global climate.

SEC. 303. DEFINITIONS.

As used in this Act:

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "household appliances" means noncommercial personal effects, including air-conditioners, refrigerators, and motor vehicles.

(3) The term "import" means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.

(4) The term "manufactured substances" means any organic or inorganic chemical substances of a particular molecular identity, or any mixture, that has been manufactured for commercial purposes.

(5) The term "medical purposes" means medical devices and diagnostic products (A) for which no safe substitute has been developed and (B) which, after notice and opportunity for public comment, has been approved and determined to be essential by the Commissioner of the Food and Drug Administration, in consultation with the Administrator.

(6) The term "person" means an individual, corporation (including a government corporation), partnership, firm, joint stock company, trust, association, or any other entity, or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State or political subdivision thereof (in-

cluding any interstate body), or of any foreign government (including any international instrumentality).

(7) The term "substances covered by this Act" means those substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion, and are listed under subsections (a) or (b) of section 105.

SEC. 304. LISTING OF REGULATED SUBSTANCES.

(a) SUBSTANCES TO BE PHASED-OUT.—Within sixty days after enactment of this Act, the Administrator shall publish a priority list of manufactured substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion. The initial list shall include chlorofluorocarbon-11, chlorofluorocarbon-12, chlorofluorocarbon-113, halon-1211, halon-1301, and carbon tetrachloride. At any time the Administrator may reclassify a substance from subsection (a) to subsection (b), or from subsection (b) to subsection (a), if environmental concerns dictate such action.

(b) OTHER REGULATED SUBSTANCES.—Simultaneously with publication of the priority list, the Administrator shall create a list of other manufactured substances which, in the judgment of the Administrator, meet the criteria set forth in the first sentence of subsection (a). The list of other substances shall be subject to the limitations on ozone depletion potential under section 109 of this Act and shall include chlorofluorocarbon-22, chlorofluorocarbon-114, chlorofluorocarbon-115, methyl chloroform, and methylene chloride. At least annually thereafter, the Administrator shall publish a proposal to add to such list each other manufacturer substance which, in the judgment of the Administrator, meets the criteria set forth in the first sentence of subsection (a). Within one hundred and eighty days of any such proposal, after allowing an opportunity for public comment, the Administrator shall promulate a regulation adding each such substance to the list, unless the Administrator determines that such substance clearly does not meet the criteria set forth in the first sentence of subsection (a). At any time the Administrator may reclassify a substance from subsection (b) to subsection (a), or from subsection (a) to subsection (b), if environmental concerns dictate such action.

(c) OZONE DEPLETION FACTOR.—Simultaneously with publication of the lists or additions thereto under this section, and at least annually thereafter, the Administrator shall assign to each listed substance a numerical value representing the ozone depletion potential of such substance, on a mass (per kilogram) basis, as compared with chlorofluorocarbon-11. The numerical value shall, for the purposes of section 109, constitute the ozone depletion factor of each such substance. Until the Administrator promulgates regulations under this subsection, the following ozone depletion factors shall apply:

SUBSTANCE	OZONE DEPLETING FACTOR
Chlorofluorocarbon-11	1.0
Chlorofluorocarbon-12	1.0
Chlorofluorocarbon-22	0.05
Chlorofluorocarbon-113	0.78
Carbon tetrachloride	1.06
Methyl chloroform	0.10
Halon-1211	2.69
Halon-1301	11.43

SEC. 305. REPORTING REQUIREMENTS.

(a) PRIORITY LIST.—Within ninety days after enactment of this Act, each person producing or importing a substance listed pursuant to subsection (a) of section 105 shall file a report with the Administrator setting forth the amount of the substance that was produced or imported by such person during calendar year 1986. Not less than annually thereafter, each producer or importer shall file a report with the Administrator setting forth the production levels of such substance in each successive twelve-month period until such producer or importer ceases production or importation of the substance. Each such report shall be signed and attested by a responsible corporate officer.

(b) OTHER REGULATED SUBSTANCES.—Within ninety days of the date on which a substance is placed on the list under subsection (b) of section 105, each person shall file a report with the Administrator setting forth the amount of the substance that was produced or imported by such person during the twelve months preceding the date of listing. Not less than annually thereafter, each producer or importer shall file a report with the Administrator setting forth the production or importation levels of such substance in each successive twelve-month period until such producer or importer ceases production or importation of the substance. Each such report shall be signed and attested by a responsible corporate officer.

SEC. 306. PRODUCTION PHASEOUT.

(a) Effective January 1, 1990, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than that produced by such person during calendar year 1986.

(b) Effective January 1, 1991, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 75 per centum of that produced by such person during calendar year 1986.

(c) Effective January 1, 1992, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 50 per centum of that produced by such person during calendar year 1986.

(d) Effective January 1, 1994, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 5 per centum of that produced by such person during calendar year 1986.

(e) Effective January 1, 1996, it shall be unlawful for any person to produce or release a substance listed pursuant to subsection (a) for any use other than medical purposes.

(f) Effective January 1, 2000, it shall be unlawful for any person to produce or release a substance listed pursuant to section 105 for any use other than medical purposes.

SEC. 307. LIMITATION ON USE.

(a) Effective January 1, 1995, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (a) of section 105 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, and, for a period not to exceed ten years after January 1, 1995, to maintain and service household appliances.

(b) Effective January 1, 2000, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (b) of section 105 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, and, for a period not to extend beyond January 1, 2005, to maintain and service household appliances. For purposes of this subsection and subsection 107(f), a manufacturing process utilizing such a substance solely as an intermediate in a manufacturing process in which the substance is wholly consumed and none is released, does not constitute a use.

SEC. 308. LIMITATION ON OZONE DEPLETION POTENTIAL.

(a) Effective January 1, 1990, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than that produced by such person during calendar year 1986.

(b) Effective January 1, 1991, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than 75 per centum of that produced by such person during calendar year 1986.

(c) Effective January 1, 1992, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than 50 per centum of that produced by such person during calendar year 1986.

(d) Effective January 1, 1996, it shall be unlawful for any person to produce a substance listed pursuant to section 105(a) for any use other than medical purposes.

(e) The Administrator shall promulgate regulations, after notice and opportunity for public comment, which require each producer to reduce its production of—

(1) a substance listed under subsection (a) of section 105 more rapidly than the schedule provided under this Act; or

(2) a substance listed under subsection (b) of section 105 on a specific schedule not otherwise provided for in this Act.

if the Administrator determines that such revised or specific schedule (A) based on new information regarding the harmful effects on the stratosphere or climate which may be associated with a listed substance, is necessary to protect human health and the environment or (B) based on the availability of substitutes for a listed substance, is attainable. Any person may petition the Administrator to issue such regulations. The Administrator shall issue such regulations within one hundred and eighty days after receipt of any such petition, unless the Administrator denies the petition.

SEC. 309. PRODUCTION PHASE-OUT EXCEPTION FOR NATIONAL SECURITY.

(a) The President may issue such orders regarding production and use of halon-1211 and halon-1301 at any specified site or facility as may be necessary to protect the national security interests of the United States if the President personally finds that adequate substitutes are not available and that the production and use of such substance is necessary to protect such national security interests. Such orders may include, where necessary to protect such interests, an exemption from any requirement contained in this Act. The President shall notify the Congress within thirty days of the issuance of an order under this paragraph providing for any such exemption. Such notification shall include a statement of the reasons for the granting of the exemption. An exemption under this paragraph shall be for a specified period which may not exceed one year. Additional exemptions may be granted, each upon the President's issuance of a new order under this paragraph. Each such additional exemption shall be for a specified period which may not exceed one year. No exemption shall be granted under this paragraph due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation.

(b) The Secretary of Defense shall seek to eliminate all emissions of halon-1211 and halon-1301 that presently occur during the testing of fire-extinguishing equipment. Pursuant to this, the Secretary of Defense shall investigate the feasibility of testing such equipment with alternative methods that do not result in the release of halon-1211 and halon-1301 to the atmosphere.

SEC. 310. CERTIFICATION OF EQUIVALENT PROGRAMS.

(a) IMPORTS.—Effective twelve months after the date on which a substance is placed on the priority list pursuant to section 105, it shall be unlawful for any person to import such substance, any product containing such substance, or any product manufactured with a process that uses such substance unless the Administrator, in consultation with the Secretary of State (the Secretary), has published a decision, after notice and opportunity for public comment, certifying that the nations in which such substance or product was manufactured and from which such substance or product is imported have established and are fully implementing programs that require reduced production of such listed substance, and limit production of other substances covered by this Act, on a schedule and in a manner that is at least as stringent as the reduction schedule for, and limitations on, domestic production which apply under this Act. The prohibition on the import of any product manufactured with a process that uses a substance listed under subsection (a) of section 105 shall include, after notice and opportunity for public comment, any product which the Administrator has reason to believe may have been manufactured with a process that uses such substance. The Administrator's decision that a product may have been manufactured with a process that uses such substance shall constitute a rebuttable presumption.

(b) CERTIFICATION OF NATIONAL PROGRAM.—The Administrator shall not certify any national program under subsection (a) unless it is determined that—

(1) the nation has adopted legislation or regulations which give the reduction schedule for each listed substance the force of law; and

(2) the legislation or regulations include reporting requirements and enforcement provisions no less stringent than those specified in this Act, and that the information contained in such reports is available to the Administrator and the Secretary.

(c) REVOCATION.—At least annually, the Administrator, in consultation with the Secretary, shall review each certification made under this section and shall revoke such certification, after notice and opportunity for public comment, unless it is determined that the conditions of subsections (a) and (b) remain satisfied and that the reduction schedule for each listed substance is in fact being carried out in such nations. Any such revocation shall take effect one hundred and eighty days after notice of the revocation has been published.

(d) ALLOCATION.—Any person who imports a substance covered by this Act or a product containing such substance shall, for the purposes of section 107 (production phaseout for priority list) and section 109 (limitation on ozone depletion potential), shall be deemed to have produced an equivalent amount of such substance on the date of such importation.

SEC. 311. LABELING.

(a) Effective ninety days after the date on which a substance is placed on a list maintained under subsection (a) or (b) of section 105, no container in which such substance is stored or transported, no product containing such substance, and no product manufactured with a process that uses a listed substance shall be introduced into interstate commerce unless it bears a label stating either of the following, as appropriate—

(1) Contains (insert name of listed substance) a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate.

(2) Manufactured with (insert name of listed substance), a substance which harms public health and en-

vironment by destroying ozone in the upper atmosphere and by disrupting the climate.

The Administrator shall issue regulations to implement the labeling requirements of this section within six months after enactment of this section, after notice and opportunity for public comment. Such regulations shall require all containers and products which are subject to this section and introduced or reintroduced into commerce later than ninety days after promulgation of such regulations to bear the appropriate label. Unless and until such regulations have been promulgated and become effective, the required label shall be permanently affixed on the face of such product, with the lettering and background in contrasting colors and the letters themselves not less than two inches in height (or 20 per centum of the height of the product which is less than four inches in height). Neither the labeling requirement nor any other provision of the World Environmental Policy Act of 1989, including the Act as a whole, shall constitute, in whole or part, a defense to liability or a cause for reduction in damages in any suit, whether civil or criminal, brought under any law, whether Federal or State, other than a suit for failure to comply with the labeling requirements of this section.

SEC. 312. MANUFACTURE AND DISPOSAL.

(a) Effective January 1, 1991—

(1) A substance listed pursuant to this Act shall be deemed to meet the requirements of section 3001 of the Resource Conservation and Recovery Act.

(2) A substance listed pursuant to this Act shall be disposed of only through incineration or other means which assures 99.999 per centum destruction of such substance.

(3) Any appliance, machine or other good containing a listed substance in bulk (including but not limited to refrigerators and air conditioners) shall be accepted for disposal only by persons licensed to accept such goods and shall be disposed of only after such substance has been removed from confinement and destroyed pursuant to the requirements of this Act. Unless and until regulations establishing a program for approving, licensing, and assuring the financial responsibility of persons to accept goods containing such substances, only governmental entities, or their agents, contractors or employees, are authorized to do so.

(4) No listed substance shall be vented into the atmosphere or otherwise released in a fashion which permits it to enter the environment in other than de minimus quantities.

(5) Any product in which a listed substance has been incorporated so as to constitute an inherent ele-

ment of such product, including but not limited to rigid and soft foams, shall be disposed of only through incineration or other means which result in not less than 99.999 per centum destruction.

(b) Effective July 1, 1991—

(1) No person shall manufacture, process, distribute in commerce or otherwise use (except for medical purposes) any listed substance in any manner other than a totally enclosed manner. "Totally enclosed" means that during the lifetime of the good in question not more than 5 per centum of the original charge or volume of such substance will be released during the course of ordinary and customary use of such good, including repairs or disposal.

(2) No person shall manufacture, process, distribute in commerce or otherwise use (except for medical purposes) a listed substance in a totally enclosed manner without—

(A) installing on such device a servicing aperture which will allow service and repair of such good with release of only de minimus amounts of such substance,

(B) assuring the availability and actual use of servicing equipment adequate to assure the achievement of no more than a de minimus release of such substance.

(c) For purposes of this section a "de minimus" amount is 0.050 per centum of the total charge of such substance or five pounds, whichever is less, released during a period of twelve months.

PART B—CONTROL OF METHANE EMISSION FROM LANDFILLS AND SEWAGE TREATMENT FACILITIES

SEC. 313. METHANE SOURCE IDENTIFICATION AND ASSESSMENT.

(a) Not later than January 1, 1991, the Administrator of the Environmental Protection Agency, in consultation with the Administrators of the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration, shall submit to the Congress a report on the following:

(1) the contribution of methane to global climate change;

(2) the sources and sinks of methane;

(3) the methods of controlling emissions of methane; and,

(4) the relationship between emissions of methane and concentrations of other trace gases, including the hydroxyl radical.

(b) The Solid Waste Disposal Act is amended by—

(1) inserting in section 4001 immediately before "are environmentally" the following: "minimize emissions and other releases to the environment and which are otherwise".

(2) in section 4002(c)(1) striking the words "reasonable protection of ambient air quality" and substituting "and the minimization of emissions and other releases to the environment of pollutants including, but not limited to, methane or other harmful gases or materials."

(3) in section 4003(a) adding a new subsection (7) as follows:

"(7) The plan shall provide for methods (including prohibitions on the nature of materials which are disposed), practices, or technologies which minimize emissions of methane and other gases, both during operation and after closure."

(4) in section 4007(a) inserting immediately before the period at the end of the second sentence the following:

", provided that the Administrator determines that such plan satisfies the requirements of paragraph (7) of section 4003. Plans which fail to satisfy such requirements shall be disapproved".

(c) Not later than January 1, 1991, the Administrator shall promulgate regulations implementing the requirements of this section and requiring State plans developed under subtitle D of the Solid Waste Disposal Act to be amended and either approved or disapproved by July 1, 1992. Any plan not affirmatively approved by such date shall be deemed disapproved for purposes of the Solid Waste Disposal Act. Amended plans shall require all facilities constructed after January 1, 1993 subject to subtitle D to be designed, constructed and operated so as to minimize emissions of methane and shall require all existing facilities to be modified prior to January 1, 1993 and thereafter operated so as to minimize emissions of methane and other pollutants.

(d) All sewage treatment facilities constructed after January 1, 1990, shall be designed, constructed and operated so as to minimize emissions of methane. All existing facilities shall be modified prior to January 1, 1993, and thereafter operated so as to minimize emissions of methane and other pollutants.

(e) Effective January 1, 1994 mass releases of methane, whether through intentional venting of wells or otherwise, and flaring of methane are prohibited.

PART C—CONTROL OF OTHER POLLUTANT EMISSIONS

SEC. 314. FINDINGS.

The Congress finds that—

(a) ground level ozone, and the pollutants which lead to its formation, contribute substantially to the following damages—

(1) increases in global average temperatures and the consequent threats to humanity and the global environment;

(2) widespread and substantial damage to crops and other vegetation, including the forests of eastern North America and Europe;

(3) injury to human health, including probable long-term damage comparable to that resulting from tobacco smoking;

(4) acidification of the soils and waters of North America and Europe;

(b) concentrations of free tropospheric ozone have doubled to quadrupled in the last century;

(c) ground level ozone is formed by the reaction of volatile organic chemicals with oxides of nitrogen in the presence of sunlight;

(d) elevated temperatures and extended summer seasons likely to accompany the global temperature increases will cause increased production of ground level ozone;

(e) virtually all oxides of nitrogen and the majority of the volatile organic chemicals result from human activities;

(f) technologies and practices exist to reduce substantially emissions of oxides of nitrogen and volatile organic chemicals;

(g) in the absence of a program to minimize emissions of volatile organic chemicals and oxides of nitrogen, emissions and concentrations of these pollutants are projected to increase.

SEC. 315. STATIONARY SOURCE CONTROLS: OXIDES OF NITROGEN.

(a)(1) Not later than January 1, 1990, the Administrator shall propose revised standards of performance pursuant to section 111 of the Clean Air Act for emissions of oxides of nitrogen (including nitrous oxide) from fossil fuel fired steam or electricity generating units, including both electric utility and non-utility units. Not later than January 1, 1991, the Administrator shall promulgate such standards of performance. Such revised standards of performance shall reflect improvements in methods for the reduction of emissions of oxides of nitrogen and shall require an emissions rate equal to or less than 0.1 pound per million British thermal units of heat input or a reduction of not less than 90 per centum from an uncontrolled state unless the Administrator determines that such limits are technologically infeasible. Unless and until such revised standards are promulgated and become final, the application of selective catalytic reduction to achieve an emissions reduction of 90 per centum shall be deemed to be such standard.

(2) Not later than January 1, 1990, the Administrator shall propose standards of performance pursuant to section 111 of the Clean Air Act for emissions of oxides of nitrogen (including nitrous oxide) from large stationary diesel and turbine engines. Not later than January 1, 1991, the Administrator shall promulgate such standards of performance. Unless and until such revised standards are promulgated and become final, the application of selective catalytic reduction to achieve an emissions reduction of 90 per centum shall be deemed to be such standard.

(b) Effective January 1, 1993, each unit of a major stationary source that is a fossil fuel fired steam generating unit shall achieve an emissions rate of oxides of nitrogen that does not exceed, on an annual average basis, 1.0 pound per million British thermal units of heat input for cyclone boilers, 0.5 pound per million British thermal units of heat input for wall-fired boilers, and 0.4 pound per million British thermal units of heat input for tangential-fired and other boilers.

SEC. 316. STATIONARY SOURCE CONTROLS: HYDROCARBONS.

(a) Not later than two years after the enactment of this section, the Administrator of the Environmental Protection Agency shall publish control technique guidelines consistent with section 171(6) of the Clean Air Act for the following categories of sources:

(A) wood furniture coating;

(B) autobody refinishing;

(C) metal rolling;

(D) SOCMI distillation; and

(E) SOCMI batch process.

(b) SEC. 304(a), part A of title I of the Clean Air Act, is amended by adding the following new section:

"HYDROCARBON EMISSION CONTROLS

"SEC. 130. (a) Not later than two years after the enactment of this section, the Administrator shall promulgate regulations establishing emission limitations, standards of performance, or standards for product composition or application for hydrocarbon emissions associated with the following categories of sources—

"(1) commercial solvents;

"(2) consumer solvents;

"(3) architectural coatings;

"(4) pesticide application;

"(5) traffic marking coatings; and

"(6) metal parts coatings in military specification applications and aerospace industry applications.

"(b) With respect to existing sources or activities not subject to section 111 or section 173, the regulations under this section shall require the degree of emission reduction or control, at a minimum, achievable through the adoption of reasonably available control technology, as defined in section 171(6). In developing regulations under subsection (a)(1) and (a)(6) of this section, the Administrator shall consult with the affected industry, including the industries procuring such parts, and with representatives of the Department of Defense, the Federal Aviation Administration, and the National Aeronautics and Space Administration involved in the establishment of specifications for such parts or coatings.

"(c) For the purposes of this Act, any requirement of a regulation promulgated under this section shall be deemed a requirement of an applicable implementation plan.".

(b) Section 116 of the Clean Air Act is amended by striking "111 or 112" and inserting in lieu thereof "111, 112, or 130".

(c) Effective January 1, 1995, each major stationary source of hydrocarbons shall comply with the standards established under section 111(b) of the Clean Air Act for new sources within such class or category, on and after the date thirty-five years following the completion of construction of such source.

SEC. 317. MOBILE SOURCE CONTROLS.

VEHICLE EMISSION STANDARDS

SEC. 301. (a) Section 202(b)(1)(A) of the Clean Air Act is amended by adding at the end thereof the following new sentence: "The regulations under subsection (a) applicable to emission of hydrocarbons from light-duty vehicles and engines manufactured during and after model year 1992 shall contain standards which provide that such emissions may not exceed 0.25 gram per vehicle mile.".

(b) Section 202(b)(1)(B) of the Clean Air Act is amended by adding at the end thereof the following new sentence: "The regulations under subsection (a) applicable to emissions of oxides of nitrogen from light-duty vehicles and engines manufactured during and after model year 1990 shall contain standards which provide that such emissions may not exceed 0.4 gram per vehicle mile.".

(c) Section 202(b)(1) of the Clean Air Act is amended by adding the following new paragraph:

"(D) The Administrator shall promulgate regulations under subsection (a) applicable to emissions of particulates from light-duty vehicles and engines manufactured during and after model year 1990, and such regulations shall contain standards which provide that such emissions, may not exceed 0.08 gram per vehicle mile.".

(d) Section 202(a)(3) of the Clean Air Act is amended by inserting after subparagraph (E) the following new subparagraphs and redesignating succeeding subparagraphs accordingly:

"(F) Regulations under paragraph (1) applicable to emissions of oxides of nitrogen from heavy-duty vehicles and engines shall contain standards that provide that such emissions shall not exceed 4.0 grams per brake horsepower-hour for vehicles manufactured during and after model year 1991 and that such emissions shall not exceed 1.7 grams per brake horsepower-hour for vehicles manufactured during and after model year 1995. Regulations applicable to emissions of particulates from heavy-duty diesel vehicles and engines shall require that such emissions may not exceed 0.1 gram per brake horsepower-hour, beginning in model year 1991 with respect to buses, and in model year 1994 with respect to other heavy-duty diesel vehicles and engines.

"(G) Regulations under paragraph (1) applicable to emissions from light-duty trucks and engines manufactured during and after model year 1990 shall contain standards that provide that such emissions may not exceed 0.5 gram per vehicle mile of oxides of nitrogen, 0.5 gram per vehicle mile of hydrocarbons, 0.08 gram per vehicle mile of particulates, and 5.0 grams per vehicle mile of carbon monoxide. Such regulations shall require that light-duty trucks and engines manufactured during and after model year 1990 comply with the standard for emissions of carbon monoxide regardless of the altitude at which they are sold. For the purposes of this subparagraph, the terms 'light-duty truck' and 'light-duty truck and engine' means any motor vehicle (including the engine thereof) with a gross vehicle weight (as determined under regulations promulgated by the Administrator) of eight thousand five hundred pounds or less and a curb weight of six thousand pounds or less (as determined under regulations promulgated by the Administrator) and which—

"(i) is designed primarily for purposes of transportation of property or is a derivation of such a vehicle,

"(ii) is designated primarily for transportation of persons and has a capacity of more than twelve persons, or

"(iii) has special features enabling off-street or off-highway operation and use.

For the purposes of this section, any motor vehicle with a gross vehicle weight of six thousand pounds or less shall be a light-duty vehicle.".

(e) Section 202(a)(3)(H) of the Clean Air Act (as redesignated by this Act) is amended by adding the following new sentence: "Regulations under this section applicable to exhaust and evaporative emissions from motorcycles and motorcycle engines manufactured during and after model year 1992 shall contain standards that provide that such emissions, in the case of motorcycle engines with a displacement of less than seven hundred cubic centimeters, may not exceed 2.0 grams per vehicle mile of hydrocarbons, 17.6 grams per vehicle mile of carbon monoxide, and 2.0 grams per test of evaporative emissions, and in the case of motorcycle engines with a displacement of seven hundred cubic centimeters or more, may not exceed 3.6 grams per vehicle mile of hydrocarbons, 17.6 grams per vehicle mile of carbon monoxide, and 4.0 grams per test of evaporate emissions.".

(f) Section 202(a)(6) of the Clean Air Act is amended to read as follows:

"(6) Regulations under this section applicable to vehicles manufactured during and after model year 1991 shall require the use of onboard hydrocarbon control technology to recover emissions from the fueling of such vehicles. Such onboard hydrocarbon control technology shall be designed to accommodate all available fuels.".

(g) Section 209(b)(1) of the Clean Air Act is amended by striking ", in the aggregate,".

(h)(1) Section 202(b)(1) of the Clean Air Act is further amended by adding the following new paragraph:

"(E) The Administrator shall promulgate regulations under subsection (a) applicable to emissions of formaldehyde from light-duty vehicles and engines manufactured during and after model year 1990 which may be fueled, in whole or in part, by fuels other than gasoline. In no event may such regulations permit emissions of formaldehyde at a higher rate than from comparable gasoline-fueled vehicles.".

(2) Section 202(a)(3) of the Clean Air Act is further amended by adding at the end thereof the following new subparagraph:

"(I) The Administrator shall promulgate regulations under subsection (1) applicable to emissions of formaldehyde (i) from heavy-duty vehicles and engines and (ii) from light-duty trucks and engines manufactured during and after model year 1991 which may be fueled, in whole or in part, by fuels other than gasoline. In no event may such regulations permit emissions of formaldehyde at a higher rate than from comparable gasoline-fueled vehicles.".

(i) Section 202 of the Clean Air Act is amended by adding the following new subsection:

"(g) The Administrator shall promulgate regulations applicable to motor vehicle and other engines manufactured during and after model year 1991 that prohibit the manufacture, sale, or introduction into commerce of any engine that requires leaded gasoline.".

(j) Section 202(a) of the Clean Air Act is amended by adding the following new paragraph:

"(7)(A) To augment existing regulations controlling carbon monoxide emissions under temperatures between 68 and 86 degrees Fahrenheit, the Administrator shall prescribe regulations under paragraph (1) of this subsection applicable to emissions of carbon monoxide over a temperature range of 20 to 68 degrees Fahrenheit from light-duty vehicles and light-duty trucks manufactured during and after model year 1990.

"(B) Regulations under subparagraph (A) shall require a reduction of at least 90 per centum from the average emissions from light-duty gasoline-fueled vehicles and trucks manufactured in model year 1970 to a level not to exceed 6.2 grams per vehicle mile of carbon monoxide at 20 degrees Fahrenheit. Demonstration of compliance shall be determined under regulations promulgated by the Administrator and may be based on testing of randomly selected engine families.".

ASSURANCE OF IN-USE COMPLIANCE

SEC. 302. (a)(1) Section 202(d)(1) of the Clean Air Act is amended by striking "five years or of fifty thousand miles" and inserting in lieu thereof "ten years or of one hundred thousand miles".

(2) The amendment made by this subsection shall take effect with respect to light-duty vehicles and engines manufactured during and after model year 1990.

(b) Section 202 of the Clean Air Act is amended by adding the following new subsection:

"(h) Each emission standard under this section shall apply to and be met by each and every vehicle or engine sold, offered for sale, introduced into commerce, or imported, and may not be met or complied with by the average of the performance of various vehicles, engines, engine families, or models manufactured by the same manufacturer.".

(c) Section 206(a) of the Clean Air Act is amended by adding the following new paragraph:

"(4) Not later than one year after the enactment of this paragraph, the Administrator shall promulgate regulations adding an idle test mode to the Federal Test Procedure for light-duty vehicles as in effect on such date of enactment. Such modified test procedure shall be used for the certification of light-duty vehicles and engines manufactured during or after model year 1990.".

(d) Section 206(b)(2)(A) of the Clean Air Act is amended by adding the following new clause:

"(iii) A certificate of conformity shall be suspended or revoked under clause (i) with respect to a class or subclass of vehicles if that class or subclass fails a sampling plan having an acceptance quality level of 10 per centum.".

(e)(1) Section 207(c)(1) of the Clean Air Act is amended by striking the word "properly" each time it occurs and inserting in lieu thereof "normally".

(2) Section 207(c) of the Clean Air Act is amended by adding the following new paragraphs:

"(4) In making determinations of nonconformity under this subsection, the Administrator shall take into account information collected under any State vehicle emission control inspection and maintenance program. Any State in which such a program is operating may petition the Administrator to make a determination of nonconformity under paragraph (1) on the basis of information collected in such program. The Administrator shall act upon such petition within sixty days of receipt of such petition.

"(5) For the purpose of paragraph (1), the phrase 'normally maintained and used' means the maintenance and use ordinarily to be expected in the hands of the ultimate purchasers, not necessarily in accordance with instructions under paragraph (3), but not including intentional misfueling or intentional violations of section 203(a)(3).".

(3) Section 207(c) of the Clean Air Act is further amended by adding the following new paragraph at the end thereof:

"(6) Not later than one hundred and eighty days after enactment of the Clean Air Standards Attainment Act of

1987, the Administrator shall establish at least one testing center in addition to the existing two testing centers, which shall be located at a site that represents high altitude conditions, to ascertain whether, when in actual use throughout their useful life (as determined under section 202(d)), each class or category of vehicle and engine to which regulations under section 202 apply conforms to the emission standards of such regulations. The Administrator shall, in cooperation with the States, conduct routine testing of a representative sample of classes or categories of vehicles and engines to which regulations under section 202 apply. In carrying out such tests, the Administrator shall assure that the testing procedures and methods are of sufficient accuracy and consistency to carry out the purposes of this section. For the purposes of this paragraph, the term 'high altitude conditions' refers to high altitude as defined in Environmental Protection Agency regulations in effect as of the enactment of this Act.".

(f)(1) Section 203(a)(3) of the Clean Air Act is amended to read as follows:

"(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any person knowingly to remove or render inoperative any such devie or element purchaser, except as may be temporarily necessary in the curse of routine proper maintenance; or

"(B) for any person to manufacture or sell, or offer to sell, any part or component intended for ue with, or as part of, any motor vehicle or motor engine, where a principal use of such part or component is to bypass, defeat, or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title, and where such part or component is being offered for sale for such use or put to such use within the specific knowledge of such person; or".

(2) Section 205 of the Clean Air Act is amended to read as follows:

"Sec. 205. (a) Any person who violates paragraph (1), (2), or (4) of section 203(a) or any manufacturer or dealer who violates paragraph (3)(A) of section 203(a) shall be subject to a civil penalty of not more than $10,000. Any other person who violates paragraph (3)(A) of section 203(a) or any person who violates paragraph (3)(B) of section 203(a) shall be subject to a civil penalty of not more than $2,500. Any such violation with respect to paragraph (1), (3), or (4) of section 203(a) shall constitute a separate offense with respect to each motor vehicle or motor vehicle engine.

"(b) A civil penalty for a violation of section 203 shall be assessed by the Administrator by an order made on the record after opportunity for a hearing. In connection with any proceeding under this section the presiding officer may issue subpoenas for the attendance and testimony of witnesses and the production of papers, books, and documents.

"(c) In determining the amount of a civil penalty, the Administrator shall take into account the gravity of the violation, the size of the violator's business, the violator's history of compliance, action taken to remedy the violation, and the effect of the penalty on the violator's ability to continue in business.

"(d) If any person fails to pay a civil penalty assessed under this section—

"(1) after the order making the assessment has become a final order and if such person does not file a petition for judicial review of the order in accordance with section 307, or

"(2) after a court in any action brought for judicial review has entered a final judgment in favor of the Administrator or the action has otherwise been terminated if such person has filed a petition for review under section 307, the Attorney General shall recover the amount assessed (plus interest from the date of the expiration of sixty days from the date of the order, or from the date of such final judgment, as the case may be) in an action brought in any appropriate district court for the United States. In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.".

(3) Section 203(c) of the Clean Air Act is amended by striking "from section 203(a)(3)" the second time it appears.

(g)(1)(A) Section 207(a)(3) of the Clean Air Act is amended by striking the last sentence and inserting in lieu thereof the following: "The term 'designed for emission control' as used in the preceding sentence means a catalytic converter, thermal reactor, trap oxidizer, oxygen sensor, air pump, air flow sensor, electronic control unit and other elements of a fuel metering system, exhaust gas recirculation system, evaporative emission control system, and altitude compensation system, or any other component that is first installed on or in a vehicle in mass production after the date of enactment of the Clean Air Standards Attainment Act of 1987 and that is installed for the primary purpose of reducing vehicle emissions. Such term shall not include those vehicle components which were in general use prior to model year 1968.".

(B) The penultimate sentence of section 207(b)(2) of the Clean Air Act is amended by striking all after "catalytic converter, thermal reactor," and inserting in lieu thereof "trap oxidizer, oxygen sensor, air pump, air flow sensor, electronic control unit and other elements of a fuel metering system, exhaust gas recirculation system, evaporative emission control system, and altitude compensation system, or any other component that is first installed on or in a vehicle in mass production after the date of enactment of the Clean Air Standards Attainment Act of 1987 and that is installed for the primary purpose of reducing vehicle emissions.".

(2) Section 207(c) of the Clean Air Act is further amended by adding at the end thereof the following new paragraph:

"(7) The Administrator shall promulgate regulations requiring each State which is required to implement a vehicle inspection and maintenance program to adopt quality control audits to assure that such inspections detect and report to the Administrator any patterns of defects in any manufacturer's emission control systems. The Administrator shall annually report to the Congress, with respect to each manufacturer, any significant finding of repeated or common emission system defects and the actions taken to remedy such nonconformity through ordered or voluntary recalls or other actions authorized by this Act.".

(3)(A) Section 207(c)(3)(B) of the Clean Air Act is amended by striking all after "no commercial relationship" and inserting in lieu thereof a period.

(B) Section 203(a)(4)(C) of the Clean Air Act is amended by striking "except as provided in subsection (c)(3) of section 207,".

(C) Section 203(a) of the Clean Air Act is amended by adding at the end thereof the following: "Paragraph (4)(C) shall not apply to the provision of any communication regarding any part, component, or system, or service provided without charge under the terms of the purchase agreement.".

(4) Section 207(e) of the Clean Air Act is amended by inserting "(1)" after "(e)" and by adding the following new paragraph:

"(2)(A) Each manufacturer of a new motor vehicle shall affix, and each dealer shall maintain, on each motor vehicle manufactured during and after model year 1990, a label indicating the full cost of applying the warranty under subsections (a) and (b) to such new motor vehicle. The form and content of such label, and the manner in which such label shall be affixed, shall be prescribed by the Administrator by rule, except that each such label shall contain, in bold face type, the following statement: 'The vehicle manufacturer or dealer may offer to sell warranties extending beyond those required by sections 207 (a) and (b) of the Clean Air Act and covering the emission system or other components or parts of the vehicle. The purchaser of the vehicle does not have any obligation to purchase the extended warranty from the manufacturer or the dealer. The vehicle purchaser may elect to buy an extended warranty from any other vendor of such warranties.'.

"(B) The Administrator may permit a manufacturer to comply with the provisions of subparagraph (A) by permitting such manufacturer to disclose the information required under this paragraph on the label required under section 3 of the Automobile Information Disclosure Act (15 U.S.C. 1232).

"(C) A violation of subparagraph (A) shall be treated as a violation of section 3 of the Automobile Disclosure Act (15 U.S.C. 1232).

"(D) The Administrator shall utilize the authorities of section 208 of this Act to verify the costs disclosed by each manufacturer under subparagraph (A).".

(5) Section 207(g) of the Clean Air Act is amended to read as follows:

"(g) For the purposes of this section, the owner of any motor vehicle or motor vehicle engine warranted under this section is responsible in the proper maintenance of such vehicle or engine to replace and to maintain, at his expense and at any service establishment or facility of his choosing, such items as spark plugs, points, condensers, and any other part, item, or device related to emission control (but not designed for emission control under the last two sentences of subsection (a)(3)), unless such part, item, or device is covered by any warranty not required by this Act.".

REGULATION OF FUELS

SEC. 303. (a) Section 211 of the Clean Air Act is amended by adding the following new subsections:

"(h)(1) After July 1, 1990, the sale or introduction into commerce of diesel fuel for use in motor vehicles, which fuel has a sulfur content in excess of 0.05 per centum by weight, shall be prohibited.

"(2) The fuel required to be used in certification of heavy-duty diesel vehicles and engines manufactured during and after model year 1991 shall have a sulfur content that does not exceed 0.05 per centum by weight.

"(3)(A) Paragraph (1) of this subsection and any regulations promulgated by the Administrator thereunder shall not require a small refinery to reduce the sulfur content of diesel fuel to 0.05 per centum by weight prior to July 1, 1993.

"(B) For the purpose of this subsection, the term "small refinery" means a refinery—

"(i) the diesel fuel producing capacity of which was in operation or under construction at any time during the one-year period immediately preceding October 1, 1987, "(ii) which has a crude oil or bona fide feed stock capacity (as determined by the Administrator) of one hundred and seventy-five thousand barrels per day or less, and

"(iii) which is owned or controlled by a refiner with a total combined crude oil or bona fide feed stock capacity (as determined by the Administrator) of three hundred and fifty thousand barrels per day or less.

"(4) The Administrator shall report to the Congress not later than the date six months after the enactment of this subsection, on whether a sulfur content in diesel fuel of 0.05 per centum by weight is necessary to assure that heavy-duty diesel vehicles and engines can achieve the particulate emission standards specified in section 202(a)(3)(F) or in regulations under section 202 for model year 1991 and model year 1994, or is otherwise warranted for the protection of public health.

"(i) Not later than two years after the date of enactment of this subsection, the Administrator shall promulgate regulations under this subsection requiring that the Reid vapor pressure of gasoline sold, offered for sale, or introduced into commerce during warm weather months (as defined by the Administrator), shall not exceed nine pounds per square inch, or with respect to any region established under section 178, any lower level requested by the regional commission for such region established under section 178(b). After April 1, 1990, no manufacturer or importer of gasoline may sell, offer for sale, or introduce into commerce any fuel which does not comply with such regulations. For ethanol/gasoline blends containing 10 per centum denatured anhydrous ethanol, the Reid vapor pressure limitations promulgated pursuant to this subsection shall be 1.0 pound per square inch greater than the applicable Reid vapor pressure limitations which apply to gasoline: *Provided, however,* That a refiner, distributor, blender, marketer, reseller, carrier, retailer, or wholesale purchaser-consumer shall be deemed to be in full compliance with the provisions of this subsection and the regulations promulgated thereunder if it can demonstrate (by showing receipt of a certification or other evidence acceptable to the Administrator) that (I) the gasoline portion of the blend complies with the Reid vapor pressure limitations promulgated pursuant to this subsection, and (II) the ethanol portion of the blend does not exceed its waiver condition under subsection (f)(4).

"(j)(1) After October 1, 1989, the sale or introduction into commerce of gasoline for use in motor vehicles, in any area that is a nonattainment area as defined in section 171(2) for carbon monoxide, during the period from October 1 to April 1 of each year, which fuel has an oxygen content less than 2 per centum oxygen by weight, shall be prohibited.

"(2) After October 1, 1990, the sale or introduction into commerce of gasoline for use in motor vehicles, in any area that is a nonattainment area as defined in section 171(2) for carbon monoxide during the period from October 1 to April 1 of each year, which fuel has an oxygen content less than 3.7 per centum oxygen by weight, shall be prohibited.

"(3) The Administrator may waive the requirements of paragraph (1) or (2) in whole or in part with respect to the level of oxygen content, the timing of available oxygenated gasoline, or the use of oxygenated fuels, in a specific area, where full implementation of such provision may reasonably be anticipated to result in an unacceptable increase in levels of other air pollutants.

"(4) Not later than two years after the enactment of this subsection, the Administrator shall submit a report to the Environment and Public Works Committee of the United States Senate and the Energy and Commerce Committee of the House of Representatives concerning the increased use of oxygenated fuels nationwide; and the use of oxygenated fuels with an oxygen content by weight greater than 3.7 per centum. Such report shall include an analysis of emissions, drivability, fuel volatility and availability of gasoline with increased oxygen levels.".

(b)(1) Section 211(d) of the Clean Air Act is amended to read as follows:

"(d)(1) Any person who violates subsection (a), (f), (h) or (j) or the regulations prescribed under subsection (c), (h), or (i) or who fails to furnish any information required by the Administrator under subsection (b) shall be subject to a civil penalty of not more than $10,000 for each and every day of such violation. Such civil penalty shall be assessed by the Administrator by an order made on the record after opportunity for a hearing. In connection with any proceeding under this section the presiding officer may issue subpoenas for the attendance and testimony of witnesses and the production of papers, books, and documents.

"(2) In determining the amount of a civil penalty, the Administration shall take into account the gravity of the violation, the size of the violator's business, the violator's history of compliance, action taken to remedy the violation, and the effect of the penalty on the violator's ability to continue in business.

"(3) If a person fails to pay a civil penalty assessed under this subsection—

"(A) after the order making the assessment has become a final order and if such person does not file a petition for judicial review of the order in accordance with section 307, or

"(B) after a court in any action brought for judicial review has entered a final judgment in favor of the

Administrator or the action has otherwise been terminated if such person has filed a petition for review under section 307,

the Attorney General shall recover the amount assessed (plus interest from the date of the expiration of sixty days from the date of the order, or from the date of such final judgment, as the case may be) in an action brought in any appropriate district court for the United States. In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.".

(2) Section 211(c) of the Clean Air Act is amended by adding a new paragraph as follows:

"(5) Regulations under this subsection shall prohibit any person from introducing, or causing or allowing the introduction, of a regulated fuel or fuel additive into a motor vehicle not designed for such fuel or fuel additive.".

(b)(1) Effective January 1, 1992, each State shall implement a vehicle emission control inspection and maintenance program.

(2) The term "vehicle emission control inspection and maintenance program" as used in section 172(d) means a program to reduce in-use emissions of hydrocarbons, carbon monoxide, oxides of nitrogen, and diesel particulates from motor vehicles that—

(A) covers all vehicles regularly operating in the program area;

(B) includes at a minimum (i) each Metropolitan Statistical Area (as defined by the Director of the Bureau of the Census) with a population of one hundred thousand or more according to the 1985 Census, containing a nonattainment area, and (ii) each area identified under section 178(c)(1);

(C) requires annual emission testing and necessary adjustment, repair, or maintenance;

(D) requires direct inspection of components of vehicle emission control systems (including evidence of misfueling) and, where such components have been rendered inoperative, the repair or replacement of such components;

(E) requires inspection of heavy-duty vehicle exhaust or compliance with existing standards for the opacity of such exhaust;

(F) is operated on a centralized or, with respect to emission testing, computerized basis; and

(G) has a repair cost waiver in the case of failure of at least $200, or provides that any repair cost waiver limit shall apply only to costs that are not covered by a warranty under section 207.

PART D—MISCELLANEOUS PROVISIONS

SEC. 218. FEDERAL ENFORCEMENT.

(a) COMPLIANCE ORDERS.—(1) Whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of this title, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both, or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

(2) Any order issued pursuant to this subsection may include a suspension or revocation of any permit issued by the Administrator and shall state with reasonable specificity the nature of the violation. Any penalty assessed in the order shall not exceed $25,000 per day of noncompliance for each violation of a requirement of this Act. In assessing such a penalty, the Administrator shall take into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(b) PUBLIC HEARING.—Any order issued under this section shall become final unless, no later than thirty days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

(c) VIOLATION OF COMPLIANCE ORDERS.—If a violator fails to take corrective action within the time specified in a compliance order, the Administrator may assess a civil penalty of not more than $25,000 for each day of continued noncompliance with the order and the Administrator may suspend or revoke any permit issued to the violator.

(d) CRIMINAL PENALTIES.—Any person who—

(1) knowingly exceeds the production limits under section 306 (production phase-out for initial list) or section 308 (limitation on ozone depletion potential);

(2) knowingly introduces into interstate commerce a substance that was produced in violation of section 306 or section 308;

(3) knowingly imports a substance listed under section 304, a product containing such substance, or a product manufactured with a process that uses such substance, in violation of section 310 (certification of equivalent programs);

(4) knowingly introduces into interstate commerce a substance or product in violation of section 307 (limitation on use) or section 311 (labeling);

(5) knowingly omits material information or makes any false material statement or representation in any application, record, report, permit, or other document filed, maintained, or used for purposes of compliance with this title; or

(6) knowingly produces, transports, distributes, or uses any substance listed under section 304, a product containing such substance, or a product manufactured with a process that uses such substance, and who knowingly destroys, alters, conceals, or fails to file any record, application, report, or other document required to be maintained or filed for purposes of compliance with this title

shall, upon conviction, be subject to a fine in accordance with title 18 of the United States Code for each day of violation, or imprisonment not to exeed two years, or both. If conviction is for a violation committed after a first conviction of such person under this paragraph, the maximum punishment under the respective paragraph shall be doubled with respect to both fine and imprisonment.

(e) CIVIL PENALTY.—Any person who violates any requirement of this title shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation.

(f) VIOLATIONS.—Each day of violation of any requirement of this title shall, for purposes of this section, constitute a separate violation. In addition, for purposes of section 306 (production phase-out for initial list), section 307 (limitation on use), section 308 (limitation on ozone depletion potential), and paragraphs (1), (2), (3), and (4) of subsection (d) of this section, the production, introduction into commerce, or importation of each one hundred pounds of a substance listed under section 304 that is in excess of the production limits under section 306 or section 308 shall constitute a separate violation.

SEC. 319. JUDICIAL REVIEW OF FINAL REGULATIONS AND CERTAIN PETITIONS.

Any judicial review of any fiscal action of the Administrator pursuant to this title shall be in accordance with sections 701 through 706 of title 5 of the United States Code, except that—

(1) a petition for review of any final action of the Administrator may be filed by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts business, and such petition shall be filed within ninety days from the date of such promulgation or denial or after such date if such petition is for review based solely on grounds arising after such nine-

tieth day; action of the Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement; and

(2) if a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to be adduced upon the hearing in such manner and upon such terms and conditions as the court may deem proper; the Administrator may modify administrative findings as to the facts, or make new findings, by reason of the additional evidence so taken, and shall file with the court such modified or new findings and the Administrator's recommendation, if any, for the modification or setting aside of the original administrative order, with the return of such additional evidence.

SEC. 320. CITIZEN SUITS.

(a) In General.—Except as provided in subsection (b) or (c) of this section, any person may commence a civil action on his own behalf—

(1) against any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this title; or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this title which is not discretionary with the Administrator.

Any action under paragraph (a)(1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred. Any action brought under paragraph (a)(2) of this subsection may be brought in the district court for the district in which the alleged violation occurred or the District Court of the District of Columbia. The district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce the permit, regulation, condition, requirement, prohibition, or order, referred to in paragraph (1), to order such person to take such other action as may be necessary, or both, or to order the Administrator to perform the act or duty referred to in paragraph (2), as the case may be, and to apply any appropriate civil penalties.

(b) ACTIONS PROHIBITED.—No action may be commenced under subsection (a)(1) of this section—

(1) prior to sixty days after the plaintiff has given notice of the violation to—

(A) the Administrator; and

(B) to any alleged violator of such permit, regulation, condition, requirement, prohibition, or order; or

(2) if the Administrator has commenced and is diligently prosecuting a civil or criminal action in a court of the United States to require compliance with such permit, regulation, condition, requirement, prohibition, or order.

In any action under subsection (a)(1), any person may intervene as a matter of right. Any action respecting a violation under this Act may be brought under this section only in the judicial district in which such alleged violation occurs.

(c) NOTICE.—No action may be commenced under paragraph (a)(2) of this section prior to sixty days after the plaintiff has given notice to the Administrator that he will commence such action. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(d) INTERVENTION.—In any action under this section the Administrator, if not a party, may intervene as a matter of right.

(e) COSTS.—The court, in issuing any final order in any action brought pursuant to this section or section 318, may award costs of litigation (including reasonable attorney and expert witness fees) to the prevailing or substantially prevailing party, whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(f) OTHER RIGHTS PRESERVED.—Nothing in this section, or this title, shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or requirement or to seek any other relief (including relief against the Administrator).

SEC. 321. SEPARABILITY.

If any provision of this title, or the application of any provision of this title to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this title, shall not be affected thereby.

SEC. 322. RELATIONSHIP TO OTHER LAWS.

(a) Nothing in this title shall be construed to diminish the authority of the Administrator under the Clean Air Act, the Resource Conservation and Recovery Act or the Toxic Substances Control Act, or any other law, or to affect the authority of any other department, agency, or instrumentality of the United States under any provision of law to promulgate or enforce any requirement respecting the control of any substance, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere, or the global environment.

(b) Nothing in this Act shall preclude or deny any State or political subdivision thereof from adopting or enforcing any requirement respecting the control of any substances, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere or the global environment.

SEC. 323. AUTHORITY OF ADMINISTRATOR.

The Administrator is authorized to prescribe such regulations as are necessary to carry out this Act.

TITLE IV—VEHICLE FUEL EFFICIENCY IMPROVEMENTS

SEC. 401. SHORT TITLE.

(a) Short Title.—This title may be cited as the "Vehicle Energy Efficiency Performance Standards Act of 1989".

(b) **Reference.**—Whenever in this title (other than in sections 421 and 422) an amendment or repeal is expressed in terms of an amendment to, or repeal of, a section or other provision, the reference shall be considered to be made to a section or other provision of the Motor Vehicle Information and Cost Savings Act.

SEC. 402. FINDINGS.

Congress finds that—

(1) vehicles are major consumers of oil and major producers of the greenhouse gases, carbon dioxide, and nitrogen oxides,

(2) fuel economy improvements in vehicles since 1975 have played a dramatic role in reducing vehicle fuel consumption, auto emissions, and the cost of operating vehicles,

(3) it is cost-effective to increase fuel efficiency in new vehicles 2 to 3 times beyond the current Federal vehicle fuel economy standards,

(4) market imperfections inhibit the commercialization of highly efficient vehicles, even with substantially higher gas prices,

(5) market imperfections can be mitigated through the increase of vehicle energy efficiency performance standards, coupled with the incentives for consumers to purchase fuel efficient vehicles, and

(6) such policies will help reduce greenhouse gases, as well as cut United States dependency upon foreign oil imports, improving the Nation's energy security and trade balance.

SEC. 403. AVERAGE FUEL ECONOMY STANDARDS.

Section 502(a) (15 U.S.C. 2002(a)), relating to average fuel economy standards, is amended by striking out

"1985 and thereafter .... 27.5"

and inserting in lieu thereof the following:

"1985 through 1991 .... 27.5
1993 and thereafter .... As provided in accordance with section 513 of this Act".

SEC. 404. EXCEPTION.

Section 502(a)(4) (15 U.S.C. 2002(a)(4)), is amended by striking out "The Secretary" and inserting in lieu thereof "Except in the case of standards established by sections 513 and 514, the Secretary".

SEC. 405. LIGHT TRUCKS.

(a) DEFINITIONS.—Section 501 (15 U.S.C. 2001), relating to definitions, is amended—

(1) in paragraph (2), by inserting "or a light truck" immediately after "off-highway operations",

(2) by redesignating paragraphs (3) through (14) as paragraphs (4) through (15) and by inserting immediately after paragraph (2) the following:

"(3) The term 'light truck' shall have such meaning as the Secretary shall prescribe by rule.".

(b) STANDARDS.—Section 502(b) (15 U.S.C. 2002(b)), relating to standards for other than passenger automobiles, is amended by inserting "or light trucks" immediately after "average fuel economy standards for automobiles which are not passenger automobiles".

SEC. 406. EXEMPTIONS.

Section 502(c)(1) (15 U.S.C. 2002(c)(1)), relating to exemptions for manufacturers of limited number of cars, is amended (1) by inserting "or 10,000 light trucks" immediately after "10,000 passenger automobiles" each place it occurs, (2) by inserting "or section 513 or 514" immediately before the period at the end of the first sentence, (3) by inserting "or section 514 and 513" immediately before "is more stringent", and (4) by inserting "or light trucks" immediately before "manufactured by manufacturers".

SEC. 407. EMERGENCY VEHICLES.

Section 502(g)(1) (15 U.S.C. 2002(g)(1)), relating to exemption of emergency vehicles, is amended by inserting immediately before the period at the end of the first sentence the following: "or section 513 or 514".

SEC. 408. CONSULTATION.

Section 502(i) (15 U.S.C. 2002(i)); relating to consultation with the Secretary of Energy), is amended by striking out "under this section" and inserting in lieu thereof "under this section or sections 513 and 514".

SEC. 409. NOTIFICATION.

Section 502(j) (15 U.S.C. 2002(j)), relating to notification of the Secretary of Energy, is amended by striking out "under this section" and inserting in lieu thereof "under this section or sections 513 and 514".

SEC. 410. CALCULATION OF AVERAGE FUEL ECONOMY.

Section 503(d)(1) (15 U.S.C. 2003(d)(1)) is amended by inserting "and light trucks" immediately after "passenger automobiles".

SEC. 411. NEW STANDARDS.

(a) Changes in the Law.—The title V of the Motor Vehicles Information and Cost Savings Act is amended by adding at the end the following:

"PASSENGER AUTOMOBILE

"Sec. 513. Notwithstanding any other provision of this Act and except as provided in section 516, commencing with model year 1993 and each model year thereafter, the average fuel economy for passenger automobiles manufactured by any manufacturer in any such model year shall not be less than the number of miles per gallon established for such model year pursuant to the following:

"Model year:	
"1993 through 1996	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1989, plus an amount equal to 20 percent (as measured in miles per gallon) of such amount achieved for model year 1989.
"1997 through 1999	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1988, plus an amount equal to 45 percent (as measured in miles per gallon) of such amount achieved for model year 1989.
"2000 and thereafter	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1989, plus an amount equal to 65 percent (as measured in miles per gallon) of such amount achieved for model year 1989.

"LIGHT TRUCKS

"SEC. 514. Notwithstanding any other provision of this Act and except as provided in section 517, commencing with model year 1993 and each model year thereafter, the average fuel economy for light trucks manufactured by any manufacturer in any such model year shall not be less than the number of miles per gallon established for such model year pursuant to the following:

“Model year:	
“1993 through 1996	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1989, plus an amount equal to 20 percent (as measured in miles per gallon) of such amount achieved for model year 1989.
“1997 through 1999	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1989, plus an amount equal to 45 percent (as measured in miles per gallon) of such amount achieved for model year 1989.
“2000 and thereafter	For each such manufacturer, the fuel economy standard required shall be an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by that manufacturer in model year 1989, plus an amount equal to 65 percent (as measured in miles per gallon) of such amount achieved for model year 1989.

“MODIFICATIONS

“SEC. 515. (a) Any manufacturer may apply to the Secretary for modification of an average fuel economy standard applicable under section 513 or section 514 to such manufacturer for model year 1993, and any model year thereafter. Such application shall contain such information as the Secretary may require by rule and shall be submitted to the Secretary within 24 months before the beginning of the model year for which such modification is requested. No such average fuel economy standard shall be adjusted if such adjustment would result in an increase or decrease of such standard by an amount in excess of .5 miles per gallon.

"(b) The Secretary shall, on an annual basis, report each such adjustment made to the Congress. In each such report, the Secretary shall justify clearly the reasons for the adjustments and shall address with respect to each such adjustment the following criteria:

"(1) technological feasibility,

"(2) economic practicability,

"(3) the effect of other Federal motor vehicle standards on fuel economy, and

"(4) the need for the Nation to reduce carbon-dioxide emissions, to reduce foreign oil imports, and to reduce annual trade deficits, and the effect on domestic employment—long-term and short-term.

"(c) The subsection (l) of section 502 shall not be applicable with respect to the fuel economy standards established pursuant to section 513 or 514.

"INCENTIVES FOR PASSENGER AUTOMOBILES

"SEC. 516. (a) Notwithstanding section 513, in the case of any manufacturer who obtained an average fleet fuel economy for passenger automobiles of at least 27.5 miles per gallon for model year 1986, the average fuel economy for passenger automobiles manufactured by such manufacturer for model years 1993 and 1994 shall be 27.5, for model years 1995, 1996, 1997, and 1998, an amount determined by the

Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 20 percent (as measured in miles per gallon) of such amount achieved for model year 1989, for model years 1999, 2000, and 2001, an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 45 percent (as measured in miles per gallon) of such amount achieved for model year 1989, and for model year 2001, and each model year thereafter, an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 65 percent (as measured in miles per gallon) of such amount achieved for model year 1989.

"INCENTIVES FOR LIGHT TRUCKS

"SEC. 517. (a) Notwithstanding section 514, in the case of any manufacturer who obtained an average fleet fuel economy for light trucks of at least 21 miles per gallon for model year 1986, the average fuel economy for light trucks manufactured by such manufacturer for model years 1993 and 1994 shall be 21, for model years 1995, 1996, 1997, and 1998, an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 20 percent (as measured in miles per gallon) of such amount achieved for model year 1986, for model years 1999, 2000, and 2001, an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 45 percent (as measured in miles per gallon) of such amount achieved for model year 1989, and for model year 2002, and each model year thereafter, an amount determined by the Secretary to be equal to the fleet average fuel economy achieved by such manufacturer in model year 1989, plus an amount equal to 65 percent (as measured in miles per gallon) of such amount achieved for model year 1989.".

(b) CONFORMING AMENDMENT.—Section 505(a)(1) (15 U.S.C. 2005(a)(1)) is amended by inserting immediately after "section 502" a comma and the following: "513 and 514".

SEC. 412. IMPOSITION OF TAX.

(a) TAX ASSESSMENT.—The Motor Vehicle Information and Cost Savings Act is amended by inserting immediately after section 508 the following new section:

"VIOLATIONS

"SEC. 508A. (a) In the case of any manufacturer who fails to comply with any average fuel economy standard applicable to such manufacturer under section 513 or 514, the Secretary is authorized to assess a tax against such manufacturer. Such tax shall be assessed in an amount equal to the amount obtained by multiplying $5 by the number of tenths of a mile per gallon by which the average fuel economy of the passenger automobiles or light trucks manufactured by such manufacturer during any model year after 1990 is exceeded by the applicable average fuel economy standard established under section 513 or 514, as the case may be, multiplied by the number of passenger automobiles or light trucks manufactured by such manufacturer during such model year.

"(b) The amount of such tax shall be assessed by the Secretary by written notice. The Secretary shall have the discretion to compromise, modify, or remit, with or without conditions, any tax assessed under subsection (a) against any person, except that any tax assessed under subsection (a) may be so compromised, modified, or remitted only to the extent—

"(1) necessary to prevent the insolvency or bankruptcy of such manufacturer,

"(2) such manufacturer shows that such violation resulted from an act of God, a strike, or a fire, or

"(3) the Federal Trade Commission has certified that modification of such tax is necessary to prevent a substantial lessening of competition, as determined under subsection (c).

The Attorney General shall collect any tax for which a manufacturer is liable under this subsection in a civil action under subsection (d)(2) (unless the manufacturer pays such penalty to the Secretary).

"(c)(1) Not later than 30 days after a determination by the Secretary to assess a tax under subsection (a) against a manufacturer, the manufacturer may apply to the Federal Trade Commission for a certification under this subsection. If the manufacturer shows and the Federal Trade Commission determines that modification of the tax for which such manufacturer is otherwise liable is necessary to prevent a substantial lessening of competition in that segment of the automobile industry subject to the standard with respect to which such tax was assessed, the Commission shall so certify. The certification shall specify the maximum amount that such tax may be reduced. To the maximum extent practicable, the Commission shall render a decision with respect to an application under this paragraph not later than 90 days after the application is filed with the Commission. A proceeding under this paragraph shall not have the effect of delaying the manufacturer's liability under subsection (a) for a tax for more than 90 days after such application is filed, but any payment made before a decision of the Commission under this paragraph becomes final shall be paid to the court in which the tax is collected, and shall (except as otherwise provided in paragraph (2)), be held by such court, until 90 days after such decision becomes final (at which time it shall be paid into the general fund of the Treasury).

"(2) Whenever a tax has been assessed and collected from a manufacturer under subsection (a) and is being held by a court in accordance with paragraph (1) and the Secretary subsequently determines to modify such tax pursuant to subsection (b), the Secretary shall direct the court to remit the appropriate amount of such tax to such manufacturer.

"(3) A claim of the United States for a tax assessed against a manufacturer under subsection (a) shall, in the case of the bankruptcy or insolvency of such manufacturer, be subordinate to any claim of a creditor of such manufacturer which arises from an extension of credit before the date on which the judgment in any collection action under this section becomes final (without regard to paragraph (1)).

"(d)(1) Any interested person may obtain review of—

"(A) a determination of the Secretary pursuant to which a tax has been assessed under subsection (a), or

"(B) a determination of the Federal Trade Commission under subsection (c)(1),

in the United States Court of Appeals for the District of Columbia or for any circuit wherein such person resides or has a principal place of business. Such review may be obtained by filing a notice of appeal in such court within 30 days after the date of such determination, and by simultaneously sending a copy of such notice by certified mail to the Secretary or the Federal Trade Commission, as the case may be, and by promptly filing in such court a certified copy of the record upon which such determination was made. Any such determination shall be reviewed in accordance with chapter 7 of title 5, United States Code.

"(2) If any person fails to pay an assessment of a tax after it has become final and unappealable order, or after the appropriate court of appeals has entered final judgment in favor of the Secretary, the Attorney General shall recover the amount for which the manufacturer is liable in any appropriate district court of the United States. In such action, the validity and appropriateness of the final order imposing the tax shall not be subject to review.

"(e)(1)(A) The Secretary shall, by rule in accordance with this subsection and subsection (f), substitute a higher amount for the amount per tenth of a mile per gallon which would be used to calculate the civil penalty under subsection (a) in the absence of such rule, if the Secretary finds that—

"(i) the additional amount of the tax which may be imposed under such rule will result in, or substantially further, substantial energy conservation for automobiles in future model years for which such higher penalty may be imposed, and

"(ii) subject to subparagraph (B), such additional amount of tax will not result in substantial deleterious impacts on the economy of the United States or of any State or region of any State.

"(B) Any findings under subparagraph (A)(ii) may be made only if the Secretary finds that it is likely that—

"(i) such additional amount of tax will not cause a significant increase in unemployment in any State or region thereof,

"(ii) such additional amount will not adversely affect competition, and

"(iii) such additional amount will not cause a significant increase in automobile imports.

"(2) Any rule under paragraph (1) may not provide that the amount per tenth of a mile per gallon used to calculate the tax under subsection (a) be less than $5 or more than $10.

"(3) Any rule prescribed under paragraph (1) shall be effective for the later of—

"(A) automobile model years beginning after model year 1991, or

"(B) automobile model years beginning at least 18 months after such rule becomes final.

"(f)(1)(A) After the Secretary develops a proposed rule pursuant to subsection (e), the Secretary shall publish such proposed rule in the Federal Register, together with a statement of the basis for such rule, and provide copies thereof to the manufacturers. The Secretary shall then provide for a period of public comment on such rule, at least 45 days for written comments thereon. A copy of any such proposed rule shall be transmitted by the Secretary to the Federal Trade Commission and the Secretary shall request such Commission to comment thereon with the period provided to the public concerning such proposed rule.

"(B) After such written comment period, any interested person (including the Federal Trade Commission) shall be afforded an opportunity to present oral data, views, and arguments at a public hearing concerning such proposal. At such hearing such interested person (including the Federal Trade Commission) shall have an opportunity to question—

"(i) other interested persons who make oral presentations,

"(ii) employees and contractors of the United States who have made written or oral presentations or who have participated in the development of the proposed rule or in the consideration thereof, and

"(iii) experts and consultants who have provided information to any person who makes an oral presentation and which is contained in or referred to in such presentation,

with respect to disputed issues of material fact, except that the Secretary may restrict questioning if the Secretary determines that such questioning is duplicative or is not likely to result in a timely and effective resolution of such issues. Any oral or documentary evidence may be received, but the Secretary as a matter of policy shall provide for the exclusion of irrelevant, immaterial, or unduly repetitious evidence.

"(C) A rule subject to this subsection may not be issued except on consideration of the whole record supported by, and in accordance with, the reliable, probative, and substantial evidence.

"(D) A transcript shall be kept of any such public hearing made in accordance with this section and such transcripts and written comments shall be available to the public at the cost of reproduction.

"(2) If any final rule is prescribed by the Secretary after such public comment period under subsection (e), it shall be published in the Federal Register, together with each of the findings required by subsection (e).

"(3)(A) Any person aggrieved by any final rule under subsection (e) may at any time before the 60th day after the date such rule is published under paragraph (2) file a petition with the United States Court of Appeals for the circuit wherein such person resides, or has a principal place of business, for judicial review thereof. A copy of the petition shall be forthwith transmitted by the clerk of the court to the Secretary. The Secretary thereupon shall file in the court the written submissions to, and transcript of, the written and oral proceedings on which the rule was based, as provided in section 2112 of title 28, United States Code.

"(B) Upon the filing of the petition referred to in paragraph (1), the court shall have jurisdiction to review the rule in accordance with chapter 7 of title 5, United States Code, and to grant appropriate relief as provided in such chapter. No rule may be affirmed unless supported by substantial evidence.

"(C) The judgment of the court affirming or setting aside, in whole or in part, any such rule shall be final, subject to review by the Supreme Court of the United States upon certiorari or certification as provided in section 1254 of title 28, United States Code.

"(4) In the case of any information which is provided to the Secretary or the court during the consideration and review of any such rule and which is determined to be confidential by the Secretary pursuant to section 11(d) of the Act of June 22, 1974 (15 U.S.C. 796(d)), any disclosure of such information by an officer or employee of the United States or of any department or agency thereof, except in an in camera proceeding by the Secretary or the court, shall be deemed a violation of section 1905 of title 18, United States Code.".

(b) INAPPLICABILITY OF SECTION 508.—Section 508 of the Motor Vehicles Information and Cost Savings Act (15

U.S.C. 2008) shall not apply to any model year for a passenger automobile or light truck after model year 1990.

SEC. 413. FEDERAL GOVERNMENT.

Section 510 (15 U.S.C. 2010) is amended by adding at the end thereof the following:

"(c) Notwithstanding subsections (a) and (b), the fleet average fuel economy for all passenger automobiles and light trucks acquired by all executive agencies after model year 1992 shall not be less than—

"Passenger automobile model years:	**Miles per gallon:**
1993 through 1996	33
1997 through 1999	39
2000 and thereafter	45.
"Light trucks model years:	**Miles per gallon:**
1993 through 1996	25
1997 through 1999	30
2000 and thereafter	35.".

SEC. 414. FUEL ECONOMY TESTING.

(a) EPA ADMINISTRATOR REQUIRED TO CONSULT WITH SECRETARY OF ENERGY.—The first sentence of paragraph (1) of section 503(d) (15 U.S.C. 2003(d)(1)), relating to measurement and calculation of fuel economy and average fuel economy, is amended by inserting before the period the following: "after consultation with the Secretary of Energy".

(b) PROCEDURES MAY BE IN CONJUNCTION WITH EMISSIONS TESTS UNDER CLEAN AIR ACT.—The third sentence of such paragraph is amended by striking out "shall" and inserting in lieu thereof "may".

(c) TESTING OF PRODUCTION VEHICLES AND TESTING OVER TIME.—Section 503(d) is further amended by adding at the end the following:

"(4)(A) For each model type and year, the EPA Administrator shall measure the fuel economy of a sampling of production passenger automobiles during the first month of manufacture for sale. The testing procedures for such measurement shall be the same as used under paragraph (1).

"(B)(i) If the fuel economy results under subparagraph (A) for any model type and year are different than the results under paragraph (1) for such type and year, the average fuel economy for purposes of section 502 (a) and (c) shall be adjusted accordingly.

"(ii) If the fuel economy results under subparagraph (A) for any model type and year are more than 0.5 mile per gallon higher or lower than the fuel economy results under paragraph (1) for such type and year, labels described in section 506 which are affixed more than 90 days after the date that results are available under subparagraph (A) shall reflect such results.

"(C) For purposes of this paragraph, the term 'production passenger automobile' means a passenger automobile manufactured for sale.

"(D)(i) Measurements and calculations under paragraph (1) shall be repeated over a period of years for purposes of monitoring automobile performance in use to determine the extent, if any, of decline in fuel economy.

"(ii) Such measurements and calculations shall be included in a report submitted by the Secretary biennially to the President and each House of Congress.".

(d) Periodic Review and Improvements in Procedures for Testing Fuel Economy.—Section 503 is further amended by adding at the end the following:

"(g)(1) To the maximum extent practicable, procedures under subsection (d) shall simulate average drivers and driving conditions in the United States.

"(2) The EPA Administrator shall, from time to time, review the procedures under subsection (d).

"(3) If the EPA Administrator finds, in conjunction with the review under paragraph (2), that the requirements of paragraph (1) are not met, he shall revise procedures under subsection (d) to comply with such paragraph.

"(4) The EPA Administrator may not make substantial revisions under paragraph (3) more frequently than once every 3 years.".

(e) Effective Date.—The amendments made by this section shall apply to measurements of fuel economy for model years (as defined in title V of the Motor Vehicle Information and Cost Savings Act) beginning more than 18 months after the date of the enactment of this Act.

SEC. 415. EXPLANATORY BOOKLET DISTRIBUTED BY EPA ADMINISTRATOR.

(a) IN GENERAL.—Paragraph (1) of subsection (b) of section 506 (15 U.S.C. 2006(b)), relating to explanatory booklet distributed by EPA Administrator, is amended—

(1) by inserting after the first sentence the following new sentence: "The EPA Administrator shall update such booklet at least twice a year.", and

(2) by adding at the end the following new sentence: "The Secretary of Energy shall distribute no less than 100 booklets each year to each dealer and shall distribute as many in addition to such 100 as are reasonably requested by dealers from time to time.".

(b) EFFECTIVE DATE.—The amendments made by subsection (a) shall apply to the 12-month period beginning on the first day of the first month after the date of the enactment of this Act and corresponding 12-month periods thereafter.

SEC. 416. FEDERAL PURCHASES OF VEHICLES.

Section 510 (15 U.S.C. 2010), as amended by section 413, is amended by adding at the end the following:

"(d) In the annual purchase of light vehicles by any executive agency, any manufacturer that offers a fleet of vehicles with a fuel economy at least 10 percent more fuel efficient than a fleet of similarly sized vehicles that have fuel economies representative of the average fuel economies within any size class shall have the right to make a discounted bid. In such a case, the bid shall be considered as if its cost had been reduced 2 percent.".

SEC. 417. RECOMMENDATIONS FOR ADDITIONAL LEGISLATION.

Section 512 (15 U.S.C. 2012), relating to reports to the Congress, is amended by adding at the end the following:

"(d) The Secretary shall, within 2 years after the date of enactment of the Vehicle Energy Efficiency Performance Standards Act of 1988, submit to the Congress recommendations for such additional legislation as may be necessary to carry out the purposes of this Act.".

SEC. 418. STUDY.

The National Academy of Sciences, in consultation with vehicle manufacturers, representatives of environmental and consumer groups, appropriate State and local officials, and representatives of labor, shall undertake a review of the current state of research and development in light trucks and passenger vehicle fuel economy and an assessment of the remaining potential for improving the fuel efficiency and reducing the energy consumption of light vehicles and trucks. The assessment shall include all aspects of vehicle design, including engines, drive train, component parts, auto body, tires, and any other aspect contributing to the reduction of energy consumption. The National Academy shall report the results of the review and assessment to Congress and in the report recommend research and development priorities that could result in bringing steady improvements into commercialization through the early years of the next century. The Secretary of Energy shall make changes in the Department of Energy's transportation research and development program based on the assessment made by the National Academy.

SEC. 419. CRITERIA FOR PRESCRIBING AMENDED STANDARDS.

(a) CRITERIA.—

(1) The Secretary may not prescribe any amended standard which increases the maximum allowable energy use, or decreases the minimum required energy efficiency, of a covered vehicle.

(2) Any new or amended vehicle energy efficiency performance standard prescribed by the Secretary of Transportation under this section for any type (or class) of covered vehicle shall be designed to achieve the maximum improvement in energy efficiency which the Secretary determines is technologically feasible and cost-effective to the consumer through savings in gas amortized over the life of the vehicle at a 3 percent real discount rate.

(b) EVALUATION.—The Secretary of Transportation shall evaluate the economic justification of the standard, considering—

(1) the economic impact of the standard on the manufacturers and on the consumers of the products subject to such standard,

(2) the savings in operating costs throughout the estimated average life of the covered product in the type (or class) compared to any increase in the price of, or in the initial charges for, or maintenance expenses of, the covered products which are likely to result from the imposition of the standard,

(3) the total projected amount of energy savings likely to result directly from the imposition of the standard,

(4) any lessening of the utility or the performance of the covered products likely to result from the imposition of the standard,

(5) the impact of any lessening of competition, as determined in writing by the Attorney General, that is likely to result from the imposition of the standard, or in a change in foreign trade,

(6) the need for reducing carbon dioxide emissions to mitigate the global greenhouse warming, as well as reducing other environmentally damaging energy-related pollutants,

(7) the need for national energy conservation, and

(8) other factors the Secretary considers relevant.

For purposes of paragraph (5), the Attorney General shall make a determination of the impact, if any, of any lessening of competition likely to result from such standard and shall transmit such determination, not later than 60 days after the publication of a proposed rule prescribing or amending a vehicle energy efficiency performance standard, in writing to the Secretary, together with an analysis of the nature and extent of such impact. Any such determination and analysis shall be published by the Secretary in the Federal Register.

SEC. 420. PROCEDURES FOR PRESCRIBING NEW OR AMENDED STANDARDS.

Not later than the beginning of fiscal year 1994, the Secretary of Transportation shall initiate proceedings to develop and adopt post-2000 vehicle energy efficiency performance standards. The new vehicle energy efficiency performance standards shall be prescribed in accordance with the following procedure:

(1) The Secretary—

(A) shall publish an advance notice of proposed rulemaking which specifies the type (or class) of covered vehicles to which the rule may apply,

(B) shall invite interested persons to submit, within 60 days after the date of publication of such advance notice, written presentations of data, views, and arguments in response to such notice, and

(C) may identify proposed or amended standards that may be prescribed.

(2) A proposed rule which prescribes an amended or new vehicle energy efficiency performance standard or prescribes no amendment or no new standard for a type (or class) of covered products shall be published in the Federal Register. In prescribing any such proposed rule with respect to a standard, the Secretary shall determine the maximum improvement in energy efficiency or maximum reduction in energy use that is technologically feasible for each type (or class) of covered vehicles. If such standard is not designed to achieve such efficiency or use, the Secretary shall state in the proposed rule the reasons therefor.

(3) After the publication of such proposed rulemaking, the Secretary shall afford interested persons an opportunity, during a period of not less than 60 days, to present oral and written comments (including an opportunity to question those who make such presentations) on matters relating to such proposed rules, including—

(A) whether the standard to be prescribed is economically justified (taking into account those factors which the Secretary shall evaluate under section 419),

(B) whether the standard will achieve the maximum improvement in energy efficiency which is technologically feasible,

(C) if the standard will not achieve such improvement, whether the reasons for not achieving such improvement are adequate, and

(D) whether such rule should prescribe a level of energy use or efficiency which is higher or lower than that which would otherwise apply in the case of any group of products within the type (or class) that will be subject to such standard.

(4) A final rule prescribing an amended or new vehicle energy efficiency performance standard or prescribing no amended or new standard for a type (or class) of covered vehicles shall be published as soon as is practicable, but not less than 90 days, after publication of the proposed rule in the Federal Register.

SEC. 421. INCREASES IN FUEL ECONOMY STANDARDS AND IN RATES APPLICABLE TO GAS GUZZLER TAX.

(a) In General.—

(1) Subsection (a) of section 4064 of the Internal Revenue Code of 1986 (relating to gas guzzler tax) is amended—

(A) by striking paragraphs (1) through (6),

(B) by redesignating paragraph (7) as paragraph (1),

(C) by striking the material preceding the table in paragraph (1) (as so redesignated) and inserting:

"(1) In the case of an automobile of any model year after 1989 and before 1992:", and

(D) by adding after paragraph (1) (as so redesignated) the following new paragraphs:

"(2) In the case of a 1992 model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 23.5	0
At least 22.5 but less than 23.5	500
At least 21.5 but less than 22.5	650
At least 20.5 but less than 21.5	850
At least 19.5 but less than 20.5	1100
At least 18.5 but less than 19.5	1400
At least 17.5 but less than 18.5	1750
At least 16.5 but less than 17.5	2150
At least 15.5 but less than 16.5	2600
At least 14.5 but less than 15.5	3100
At least 13.5 but less than 14.5	3600
At least 12.5 but less than 13.5	4100
Less than 12.5	4600.

"(3) In the case of a 1993 model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 24.5	0
At least 23.5 but less than 24.5	500
At least 22.5 but less than 23.5	650

At least 21.5 but less than 22.5	850
At least 20.5 but less than 21.5	1100
At least 19.5 but less than 20.5	1400
At least 18.5 but less than 19.5	1750
At least 17.5 but less than 18.5	2150
At least 16.5 but less than 17.5	2600
At least 15.5 but less than 16.5	3100
At least 14.5 but less than 15.5	3600
At least 13.5 but less than 14.5	4100
At least 12.5 but less than 13.5	4600
Less than 12.5	5100.

"(4) In the case of a 1994 model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 25.5	0
At least 24.5 but less than 25.5	500
At least 23.5 but less than 24.5	650
At least 22.5 but less than 23.5	850
At least 21.5 but less than 22.5	1100
At least 20.5 but less than 21.5	1400
At least 19.5 but less than 20.5	1750
At least 18.5 but less than 19.5	2150
At least 17.5 but less than 18.5	2600
At least 16.5 but less than 17.5	3100
At least 15.5 but less than 16.5	3600
At least 14.5 but less than 15.5	4100
At least 13.5 but less than 14.5	4600
Less than 13.5	5100.

"(5) In the case of a 1995 model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 26.5	0
At least 25.5 but less than 26.5	500
At least 24.5 but less than 25.5	650
At least 23.5 but less than 24.5	850
At least 22.5 but less than 23.5	1100
At least 21.5 but less than 22.5	1400
At least 20.5 but less than 21.5	1750
At least 19.5 but less than 20.5	2150
At least 18.5 but less than 19.5	2600
At least 17.5 but less than 18.5	3100
At least 16.5 but less than 17.5	3600
At least 15.5 but less than 16.5	4100
At least 14.5 but less than 15.5	4600
At least 13.5 but less than 14.5	5100
Less than 13.5	5700.

"(6) In the case of a 1996 or later model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 27.5	0
At least 26.5 but less than 27.5	500
At least 25.5 but less than 26.5	650
At least 24.5 but less than 25.5	850
At least 23.5 but less than 24.5	1100
At least 22.5 but less than 23.5	1400
At least 21.5 but less than 22.5	1750
At least 20.5 but less than 21.5	2150
At least 19.5 but less than 20.5	2600
At least 18.5 but less than 19.5	3100
At least 17.5 but less than 18.5	3600
At least 16.5 but less than 17.5	4100
At least 15.5 but less than 16.5	4600
At least 14.5 but less than 15.5	5100
At least 13.5 but less than 14.5	5700
Less than 13.5	6200.

"(7) In the case of a 1997 or later model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 28.5	0
At least 27.5 but less than 28.5	500
At least 26.5 but less than 27.5	650
At least 25.5 but less than 26.5	850
At least 24.5 but less than 25.5	1100
At least 23.5 but less than 24.5	1400
At least 22.5 but less than 23.5	1750
At least 21.5 but less than 22.5	2150
At least 20.5 but less than 21.5	2600
At least 19.5 but less than 20.5	3100
At least 18.5 but less than 19.5	3600
At least 17.5 but less than 18.5	4100
At least 16.5 but less than 17.5	4600
At least 15.5 but less than 16.5	5100
At least 14.5 but less than 15.5	5700
At least 13.5 but less than 14.5	6200
Less than 13.5	6700.

"(8) In the case of a 1998 or later model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 29.5	0
At least 28.5 but less than 29.5	500
At least 27.5 but less than 28.5	650
At least 26.5 but less than 27.5	850
At least 25.5 but less than 26.5	1100
At least 24.5 but less than 25.5	1400
At least 23.5 but less than 24.5	1750
At least 22.5 but less than 23.5	2150
At least 21.5 but less than 22.5	2600
At least 20.5 but less than 21.5	3100
At least 19.5 but less than 20.5	3600
At least 18.5 but less than 19.5	4100
At least 17.5 but less than 18.5	4600
At least 16.5 but less than 17.5	5100
At least 15.5 but less than 16.5	5700
At least 14.5 but less than 15.5	6200
At least 13.5 but less than 14.5	6700
Less than 13.5	7200.

"(9) In the case of a 1999 or later model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 30.5	0
At least 29.5 but less than 30.5	500
At least 28.5 but less than 29.5	650
At least 27.5 but less than 28.5	850
At least 26.5 but less than 27.5	1100
At least 25.5 but less than 26.5	1400
At least 24.5 but less than 25.5	1750
At least 23.5 but less than 24.5	2150
At least 22.5 but less than 23.5	2600
At least 21.5 but less than 22.5	3100
At least 20.5 but less than 21.5	3600
At least 19.5 but less than 20.5	4100
At least 18.5 but less than 19.5	4600
At least 17.5 but less than 18.5	5100
At least 16.5 but less than 17.5	5700
At least 15.5 but less than 16.5	6200
At least 14.5 but less than 15.5	6700
At least 13.5 but less than 14.5	7200
Less than 13.5	7700.

"(10) In the case of a 2000 or later model year automobile:

"If the fuel economy of the model type in which the automobile falls is:	The tax is:
At least 31.5	0
At least 30.5 but less than 31.5	500
At least 29.5 but less than 30.5	650
At least 28.5 but less than 29.5	850
At least 27.5 but less than 28.5	1100
At least 26.5 but less than 27.5	1400
At least 25.5 but less than 26.5	1750
At least 24.5 but less than 25.5	2150
At least 23.5 but less than 24.5	2600
At least 22.5 but less than 23.5	3100
At least 21.5 but less than 22.5	3600
At least 20.5 but less than 21.5	4100
At least 19.5 but less than 20.5	4600
At least 18.5 but less than 19.5	5100
At least 17.5 but less than 18.5	5700
At least 16.5 but less than 17.5	6200
At least 15.5 but less than 16.5	6700
At least 14.5 but less than 15.5	7200
At least 13.5 but less than 14.5	7700
Less than 13.5	8200.".

(2) Paragraph (3) of section 4064(b) of the Internal Revenue Code of 1986 (defining model type) is amended to read as follows:

"(3) MODEL TYPE.—The term 'model type' means each vehicle configuration as defined in the rules which were prescribed by the EPA Administrator for the purposes of section 501 of the Motor Vehicle Information and Cost Savings Act (15 U.S.C. 12001) and which were in effect on January 1, 1989."

(b) EFFECTIVE DATE.—The amendments made by subsection (a) shall apply with respect to 1990 and later model year automobiles (as defined in section 4064(b) of the Internal Revenue Code of 1986).

SEC. 422. TAX INCENTIVES FOR THE PURCHASE OF FUEL EFFICIENT VEHICLES.

(a) IN GENERAL.—Subpart B of part IV of subchapter A of chapter 1 of the Internal Revenue Code of 1986 (relating to foreign tax credit, etc.) is amended by adding at the end thereof the following new section:

"SEC. 30. FUEL EFFICIENT PASSENGER VEHICLES.

"(a) GENERAL RULE.—There shall be allowed as a credit against the tax imposed by this chapter for the taxable year the amount determined under subsection (b) for each qualified passenger vehicle purchased by the taxpayer during the taxable year.

"(b) AMOUNT OF CREDIT PER VEHICLE.—The amount determined under this subsection for any qualified passenger vehicle is the amount determined under the following tables:

"(1) MODEL YEARS 1993 AND 1994.—In the case of a vehicle of model year 1993 or 1994:

"If the percentage by which the fuel economy of the vehicle exceeds the fuel economy of the model type in which such vehicle falls is:		The amount of credit for the vehicle is:
At least	Less than	
	15	$ 0
15	20	250
20	25	400
25		750.

"(2) MODEL YEARS 1995 THROUGH 2000.—In the case of a vehicle of model year 1995, 1996, 1997, 1998, 1999, or 2000:

"If the percentage by which the fuel economy of the vehicle exceeds the fuel economy of the model type in which such vehicle falls is:		The amount of credit for the vehicle is:
At least	Less than	
	20	$ 0
20	25	400
25	30	750
30	50	1,000
50	75	1,500
75		2,000.

"(c) Definitions.—For purposes of this section—

"(1) Qualified passenger vehicle.—The term 'qualified passenger vehicle' means any passenger automobile (as defined in section 501 of the Motor Vehicle Information and Cost Savings Act) the original use of which begins with the taxpayer.

"(2) Fuel economy, model type, model year.—The terms 'fuel economy', 'model type', and 'model year' have the respective meanings given such terms by section 4064.

"(d) Application With Other Credits.—The credit allowed by subsection (a) for any taxable year shall not exceed the excess (if any) of—

"(1) the regular tax for the taxable year reduced by the sum of the credits allowable under subpart A and sections 27, 28, and 29, and

"(2) the tentative minimum tax for the taxable year."

(b) CLERICAL AMENDMENT.—The table of sections for such subpart B is amended by adding at the end thereof the following new item:

"Sec. 30. Fuel efficient passenger vehicles."

(c) EFFECTIVE DATE.—The amendments made by this section shall apply to taxable years ending after December 31, 1991.

TITLE V—WASTE MINIMIZATION AND RECYCLING

SEC. 501. STUDY AND SCIENTIFIC RESEARCH REGARDING DEGRADABLE MATERIALS AND RECYCLING.

(a) IN GENERAL.—The Secretary of Commerce shall conduct a study, including scientific research, regarding—

(1) available and potential degradable materials and possible methods for encouraging the increased use of such materials in manufactured goods;

(2) potential incentives for facilitating the development of new markets for recycled nondegradable materials, with an emphasis on nondegradable materials used in packaging;

(3) methods which may be used—

(A) to ensure development of technologies for recycling nondurable consumer products; and

(B) to ensure development of consumer products that are degradable in the marine environment; and

(4) the feasibility of requiring warning labels on products that are not subject to recycling to inform consumers about the shortage of landfill capacity.

(b) REPORTS.—Not later than 2 years after the date of the enactment of this Act, the Secretary of Commerce shall transmit a report to the Congress—

(1) which describes the findings and conclusions of the research and studies required by this section; and

(2) which makes recommendations to Congress regarding—

(A) how to ensure the development of technologies for recycling nondurable consumer products;

(B) how to expand the marketing of recycled products; and

(C) how to ensure the development of consumer products that are degradable in the marine environment.

SEC. 502. STUDY AND RESEARCH REGARDING USE OF DEGRADABLE MATERIALS IN, AND FEASIBILITY OF RECYCLING OF, MEDICAL EQUIPMENT AND SUPPLIES.

(a) IN GENERAL.—The Secretary of Health and Human Services shall conduct a study, including scientific research, regarding—

(1) degradable materials which could be used in place of nondegradable materials currently used in medical equipment and supplies; and

(2) the feasibility of recycling nondegradable medical supplies.

(b) REPORT.—Not later than 2 years after the date of the enactment of this Act, the Secretary of Health and Human Services shall transmit a report to the Congress which describes the findings and conclusions of the study required by this section.

SEC. 503. STUDY OF NATIONAL SECURITY IMPLICATIONS OF USE OF DEGRADABLE MATERIALS AND COMPLIANCE WITH ACT.

(a) IN GENERAL.—The Secretary of Defense shall conduct a study, including scientific research, regarding—

(1) the implications for national defense of requiring use of degradable materials in items procured by the Department of Defense; and

(2) the national security implications of requiring the Department of Defense to comply with section 7.

(b) REPORT.—Not later than 2 years after the date of the enactment of this Act, the Secretary of Defense shall transmit a report to the Congress which describes the findings and conclusions of the study required by this section.

SEC. 504. MUNICIPAL WASTE AND SEWAGE SLUDGE COMPOSTING PILOT PROJECT.

(a) In General.—Not later than 6 months after the date of the enactment of this Act, the Secretary of Agriculture shall initiate a pilot project to develop and demonstrate viable technology for the composting of municipal waste and sewage sludge.

(b) Project Requirements.—The pilot project carried out under this section shall include—

(1) composting of municipal garbage and other solid waste in combination with sewage sludge;

(2) separation and recovery of nondegradable materials from the resulting compost mixture;

(3) utilization of the finished compost for agricultural purposes; and

(4) utilization of the recovered nondegradable materials for construction materials and other purposes.

(c) Report.—The Secretary of Agriculture shall submit a report to the Congress not later than 1 year after the date of the enactment of this Act which describes the results of a project carried out under this section.

SEC. 505. OFFICE OF RECYCLING AND WASTE MINIMIZATION.

(a) Establishment.—Not later than 6 months after the date of the enactment of this Act, the Administrator, shall establish an Office of Recycling and Waste Minimization (hereafter referred to as the "Office").

(b) FUNCTION.—The Office established pursuant to this section—

(1) shall make grants under subsection (c) to public and private entities to support research and development by such entities relating to innovative recycling technology; and

(2) shall collect, catalog, and disseminate information to interested persons regarding waste disposal and recycling technology.

(c) GRANTS.—The Office shall make grants for studies and scientific research relating to recycling of nondegradable materials, including grants for—

(1) a study to determine the nondegradable products and materials which—

(A) are not currently recycled in significant amounts; and

(B) which are found in the largest amounts by volume and by weight in municipal solid waste streams;

(2) a study of which post-consumer nondegradable products and materials are best suited for recycling, and of ways to encourage industry to include recyclability as a basic design goal for the long-term resolution of the issue of recycling of nondegradable materials;

(3) scientific research into the development of recycling methods and systems for nondegradable materials, including collection, sorting, reclamation, and end-use manufacturing, which will improve energy conservation through the preservation of the chemical energy content of recycled nondegradable waste products and materials; and

(4) an analysis of which nondegradable waste products and materials present potential environmental risks through current disposal pathways and of the role of recycling in reducing such risks, including an analysis of issues relating to biodegradable materials and the impact of nondegradable materials on marine life.

(d) OUTREACH PROGRAM.—

(1) IN GENERAL.—The Administrator, and the Secretary of Education, shall conduct a 5-year public outreach program to provide information to secondary school students, State and local governments, and the general public regarding—

(A) the harmful effects on the environment of the improper disposal of wastes;

(B) the importance of the proper disposal of municipal wastes;

(C) the benefits of recycling; and

(D) methods to encourage voluntary recycling activities.

(2) FORMAT.—In conducting the outreach program described in paragraph (1), the Administrator may—

(A) organize and conduct workshops with interested groups;

(B) develop educational materials and provide them to secondary school students;

(C) record public service announcements for radio and television broadcast and develop print advertisements for newspapers, magazines, and other publications;

(D) distribute leaflets, posters, and other materials;

(E) encourage employers and labor organizations to include appropriate educational materials in their in-house publications; and

(F) provide technical assistance and other information to schools, governments, and community groups wishing to conduct educational programs on waste disposal and recycling.

(e) AUTHORIZATION OF APPROPRIATIONS.—There are authorized to be appropriated to the Office of Recycling and Waste Minimization established pursuant to this section, for making grants and carrying out other activities authorized by this section, not more than $10,000,000 for fiscal year 1990.

SEC. 506. PROHIBITION.

(a) IN GENERAL.—No person—

(1) shall produce, manufacture, distribute, sell, or deliver in a State any nonrecycled consumer good listed by the Administrator under section 507(b);

(2) shall distribute, sell, or deliver any food or beverage intended for immediate consumption, in any container composed of a material which is not photodegradable or biodegradable; or

(3) shall distribute, sell, deliver, or otherwise provide any regulated item which is made in whole or in part of a material which is not a naturally degradable material.

(b) PENALTY.—

(1) CIVIL PENALTY.—Any person who violates this section shall be subject to a civil penalty assessed by the Administrator of not more than $5,000 for each offense.

(2) CRIMINAL PENALTY.—Any person who knowingly violates this section shall be guilty of a misdemeanor and on conviction shall be fined under title 18, United States Code, imprisoned not more than one year, or both.

(c) DEFINITIONS.—In this section—

(1) REGULATED ITEM.—The term "regulated item" means any device which—

(A) is made, used, or designed for the purpose of packaging, transporting, or carrying multipackaged cans, bottles, or other containers, and which is of a size, shape, design, or type capable, when discarded, of entangling fish or wildlife; or

(B) is a form of secondary packaging (including a shopping bag) which is used for temporary containment and conveyance of other items distributed, sold, or delivered.

(2) NATURALLY DEGRADABLE MATERIAL.—The term "naturally degradable material" means a material which, when discarded, will be reduced to environmentally benign subunits under the action of normal environmental forces (including biological decomposition, photodegradation, and hydrolysis).

(d) EFFECTIVE DATE.—Subsections (a)(2) and (3) shall be effective on the date which is 2 years after the date of the enactment of this Act.

SEC. 507. DESIGNATION OF NONRECYCLED CONSUMER PRODUCTS, REGULATED ITEMS, AND NATURALLY DEGRADABLE MATERIALS.

(a) CONSUMER PRODUCTS DESIGNATION REGULATIONS.—

(1) ISSUANCE OF REGULATIONS.—Not later than 4 years after the date of the enactment of this Act, the Administrator shall issue regulations which establish criteria and procedures under which the Administrator—

(A) shall designate items to be nonrecycled consumer goods for purposes of section 7;

(B) shall designate items to be regulated items for purposes of section 7; and

(C) shall designate materials to be naturally degradable materials for purposes of section 7.

(2) NONRECYCLED CONSUMER GOODS CRITERIA.—Criteria established in regulations issued under this subsection—

(A) shall require the designation of an item as a nonrecycled consumer good if—

(i) the item is manufactured or otherwise produced for commercial sale;

(ii)(I) the item has a limited useful life after final sale; or

(II) the item is used principally for the packaging or other temporary containment prior to final sale of another commercially produced item; and

(iii) less than 75 percent of all such items produced, manufactured, distributed, sold, or delivered in the United States each year are commonly remanufactured and resold or otherwise recycled; and

(B) shall provide for designation of a material as a naturally degradable material only if it is reduced to environmentally benign subunits within the shortest period of time that is consistent with the intended use of items which contain the material.

(b) LISTING OF ITEMS AND MATERIALS.—

(1) IN GENERAL.—Not later than 1 year after the date of the issuance of regulations under subsection (a), the Administrator shall issue and thereafter periodically update—

(A) a list of items which are designated by the Administrator under such regulations to be nonrecycled consumer goods;

(B) a list of items which are designated by the Administrator under such regulations to be regulated items; and

(C) a list of materials which are designated by the Administrator under such regulations to be naturally degradable materials.

(2) EXCLUSION FROM LIST.—The Administrator may exclude an item from a list issued and updated under paragraph (1)(A)—

(A) with respect to production, manufacture, distribution, sale, and delivery of such item for use for national defense purposes if the President, after consultation with the Secretary of Defense, certifies to the Administrator that inclusion of the item in the list would unreasonably harm national security; or

(B) if the Administrator determines—

(i) that it is not feasible to require recycling of the item; and

(ii) that it is not feasible to manufacture or otherwise produce the item or material in a biodegradable form.

SEC. 508. STATE IMPLEMENTATION PLANS.

(a) FEDERAL GUIDELINES.—Not later than six months after the date of issuance of regulations under section

507(a)(1) of this Act, the Administrator, after consultation with State authorities, shall promulgate guidelines to assist States in the development of recycling and waste minimization implementation plans for each State (hereafter referred to as the "Plant").

(b) STATE PLAN.—Each State shall adopt and submit to the Administrator, within twelve months after the date of issuance of guidelines under section 508(a) of this Act, a plan which provides for implementation and enforcement of the requirements of this title within such State, including each of the following:

(1) A list of those items which each State shall designate under the regulations to be nonrecycled consumer good.

(2) A list of those items which are designated by each State to be regulated items.

(3) A list of materials which are to be designated by each State to be naturally degradable materials.

(4) A plan to ensure that the regulations will be faithfully implemented.

The Administrator shall, within four months after the date required for submission of the Plan under this subsection, approve or disapprove such Plan.

(c) EFFECT OF STATE PERMIT.—Any action taken by a State under a recycling and waste minimization program authorized under this section shall have the same force and effect as action taken by the Administrator under this title.

(d) DENIAL OR WITHDRAWAL OF AUTHORIZATION.—Whenever the Administrator determines that a State is not administering and enforcing a program authorized under this section in accordance with requirements of this section, he shall so notify the State and, if appropriate corrective action is not promptly taken, not to exceed ninety days, the Administrator shall establish a Federal program pursuant to this title.

(e) FAILURE TO DEVELOP AND IMPLEMENT PLAN.—Notwithstanding any provision of law, failure by a State to develop and implement relevant implementation plans may result in the loss of such assistance, including grants, as the Administrator may determine.

SEC. 509. DEFINITION.

For the purposes of this Act the term "Administrator" means the Administrator of the Environmental Protection Agency.

SEC. 510 EFFECTIVE DATE.

(a) IN GENERAL.—Except as provided in subsection (b), this Act shall be effective on the date of the enactment of this Act.

(b) PROHIBITIONS.—Section 7 shall be effective on the date which is 5 years after the date of the enactment of this Act.

TITLE VI—THE WORLD BANK AND SUSTAINABLE ECONOMIC DEVELOPMENT

SEC. 601. FINDINGS.

The Congress finds that—

(1) planning for economic development and planning for sound ecological management need to be carried out as part of an integrated conception of sustainable growth;

(2) despite progress toward such an integrated approach in the United States and abroad, one of the most important continuing shortcomings is the absence of public information concerning proposed major projects to be financed by international lending institutions such as the World Bank; and

(3) while recognizing the normal needs for confidentiality in banking matters, the Congress finds that actions taken by the World Bank and other international financial institutions can so powerfully influence global ecological issues as to require a modification of normal banking attitudes.

SEC. 602. ACCOUNTING FOR THE ENVIRONMENTAL IMPACTS OF WORLD BANK-SPONSORED DEVELOPMENT PROJECTS.

(a) Congress directs the Secretary of the Treasury to enter into discussions with the President of the World Bank and with appropriate officials of the governments of other major contributors to that institution, for the purpose of working out guidelines for advance disclosure and discussion of prospective bank loans prior to their approval within the Bank. The purpose of this disclosure shall be to make it possible for the major donor governments to have the opportunity to satisfy themselves that major environmental consequences unfavorable to global environmental interests will not occur as the result of the proposed project; and

(b) the President is hereby directed to instruct the United States representatives to the World Bank to request that all future energy-sector lending for new energy supplies be contingent on a finding by the Director of the World Bank Environment Department that the quantity of energy services specified in each loan proposal could not be delivered at the same or lower cost by improving the efficiency of energy use.

TITLE VII—ASSISTANCE TO INTERNATIONAL FAMILY PLANNING ORGANIZATIONS

SEC. 701. FINDINGS.

The Congress finds that—

(1) the expansion of the global population from the present level of approximately five billion to an estimated level of eight billion by the year 2025, with the bulk of that growth concentrated in the developing and underdeveloped countries, will negate efforts to moderate damage to the global environment;

(2) such an expansion of the global population will also negate and reverse efforts to improve the health and living standards of billions of peoples living in the affected regions; contributing to human misery, to political tensions, and even to the risk of war; and

(3) as a result of the pressures created by this population growth and its side effects, there will be increasing resort to abortion by individuals who perceive no choice, and by governments which may resort to coercive measures out of desperation.

SEC. 702.

It is the sense of the Congress that—

(1) it should be the policy of the United States to provide funds for family planning to governmental and

nongovernmental organizations operating in foreign countries, providing these organizations can provide guarantees, backed by auditable procedures, that no United States funds will be used to pay for the costs of performing abortions; and

(2) accordingly, section 104 of the 1961 Foreign Assistance Act shall hereafter, notwithstanding any other legislative provisions, be understood to permit United States funds to be provided for support of family planning in foreign countries, providing any receiving entity provides binding contractual obligations, verifiable by audit, that no such funds will be used to pay for the costs of performing abortions.

TITLE VIII—CONSERVATION OF WORLD BIODIVERSITY

SEC. 801. FINDINGS.

The Congress finds that—

(1) the Earth's biological diversity is being rapidly reduced at a rate without precedent in human history, and this rate is certain to increase greatly in the near future;

(2) most losses of biological diversity are unintended and largely avoidable consequences of human activity;

(3) while the most rapid losses of biological diversity are occurring outside the United States, biological impoverishment is also a serious problem within the country;

(4) humans depend on biological resources, including plants, animals, and microorganisms, for food, medicine, shelter, and other important products;

(5) biological diversity is valuable as a source of intellectual and scientific knowledge, recreation, and aesthetic pleasure;

(6) reduced biological diversity may have serious consequences for human welfare as untapped resources for research and agricultural, medicinal, and industrial development are irretrievably lost;

(7) reduced biological diversity may also endanger the functioning of ecosystems and critical ecosystem processes that moderate climate, govern nutrient cycles and soil conservation and production, control pests and diseases, and degrade wastes and pollutants;

(8) reduced biological diversity will diminish the raw materials available for scientific and technical advancement, including the development of improved varieties of cultivated plants and domesticated animals;

(9) existing information regarding the abundance and distribution of biological diversity is inadequate,

often inaccessible, and frequently inapplicable to conservation management, thus hampering the efficiency of resource policy and management decisions;

(10) existing conservation laws largely address the protection of individual species that have already suffered declines, rather than focusing on maintaining ecosystem conditions that are necessary for sustaining healthy diversity across a broad range of species;

(11) maintaining biological diversity through habitat preservation is often less costly and more effective than efforts to save species once they become endangered;

(12) existing laws and programs relevant to the loss of biological diversity in the United States and around the world are largely uncoordinated and inadequate, and sometimes result in duplication of efforts, conflicts in goals, and gaps in geographic and taxonomic coverage;

(13) a comprehensive and coordinated Federal strategy is needed to arrest the loss of biological diversity and also, where possible, to restore biological diversity both through natural recovery and active management;

(14) increased biological and ecological research is needed to provide the knowledge to maintain biological

diversity, to protect and manage ecosystems, and to ensure the sustainable use of natural resources;

(15) increased understanding and appreciation by the public of the importance of biological diversity is necessary for effective conservation; and

(16) because it cannot be predicted which biological resources will be most important for future needs, maintaining the diversity of living organisms in their natural habitats is prudent policy.

SEC. 802. DEFINITIONS.

For purposes of this Act—

(1) the term "biological diversity" means the full range of variety and variability within and among living organisms and the ecological complexes in which they occur, and encompasses ecosystem or community diversity, species diversity, and genetic diversity;

(2) the terms "conserve", "conserving", and "conservation" refer to protective measures for maintaining existing biological diversity and active measures for restoring diversity through management efforts, in order to protect, restore, and enhance as much of the variety of species and communities as possible in abundances and distributions that provide for their continued existence and normal functioning;

(3) the term "ecosystem or community diversity" means the distinctive assemblages of species and biotic processes that occur in different physical settings of the biosphere and distinct parts of the world;

(4) the term "genetic diversity" means the differences in genetic composition within and among populations of a given species; and

(5) the term "species diversity" means the richness and variety of species that inhabit the world.

SEC. 803. PURPOSES.

It is the purpose of this Act—

(1) to require explicit assessment of effects on biological diversity in all evaluations of the environmental effects of major Federal actions;

(2) to establish a Federal strategy for the conservation of biological diversity;

(3) to establish mechanisms for coordinating Federal, State, and private efforts to preserve biological diversity and natural environments;

(4) to undertake an internationally coordinated effort to collect, synthesize, and disseminate adequate data and information for the understanding of biological diversity;

(5) to support basic environmental research in genetics, biochemistry, physiology, ecology, systematics,

and biogeography necessary for the conservation of biological diversity; and

(6) to educate the citizens of the United States and the world regarding the importance of biological diversity and foster actions that prevent biological impoverishment and preserve biological diversity and natural resources.

SEC. 804. NATIONAL BIOLOGICAL DIVERSITY AND ENVIRONMENTAL POLICY.

(a) POLICY.—It is the public policy of the United States that conservation of biological diversity is a national goal, and efforts toward conservation are a national priority.

(b) BIOLOGICAL DIVERSITY CONTEXTS.—In implementing the policy set forth in subsection (a), biological diversity of the entire biosphere shall be considered in global, national, regional, and local contexts.

(c) CONSISTENCY OF FEDERAL ACTION.—The actions, policies, and programs of all Federal agencies shall be consistent with the goal of conservation of biological diversity.

(d) AMENDMENT TO THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969.—Section 102(2)(C)(i) of the National Environmental Policy Act of 1969 (42 U.S.C. 4332(2)(C)(i)) is amended by adding at the end the following: "including any impacts on biological diversity,".

(e) COUNCIL ON WORLD ENVIRONMENTAL POLICY.—The President's Council on World Environmental Policy shall—

(1) establish guidelines, in consultation with the National Scientific Advisory Committee on Biological Diversity established under section 809 (hereafter in this Act referred to as the "Scientific Advisory Committee"), for consideration of biological diversity in the preparation of environmental impact statements; and

(2) identify, in consultation with the National Center for Biological Diversity and Environmental Research established under section 805 (hereafter in this Act referred to as the "Center") and other Federal, State, and private organizations, those biotic communities, species, and populations that appear to be in decline or in imminent danger of loss of viability, or are otherwise of special concern, and shall include such information in its annual report.

SEC. 805. NATIONAL CENTER FOR BIOLOGICAL DIVERSITY AND ENVIRONMENTAL RESEARCH.

(a) ESTABLISHMENT AND PURPOSE.—There is established a National Center for Biological Diversity and Environmental Research (the Center), whose primary purpose shall be to set national priorities and provide leadership and coordination for the understanding and promotion of knowledge of the biota of the Nation, with respect to its composition, systematics, distribution, biological properties, and ecological relationships (including environmental significance), and the effects on the biota of the activities of people, and to make this knowledge accessible to the people of the United States.

(b) FUNCTIONS.—The functions of the Center shall be—

(1) to establish a cooperative network of Federal, State, and private agencies, institutions, and organizations for the collection of information regarding the biota;

(2) to oversee a review of existing information on biological diversity, including data bases;

(3) to identify taxonomic groups and geographical areas in need of study, and to develop a strategic plan for, initiate, and provide financial support toward, an ongoing survey of the biota of the Nation;

(4) to provide for the conducting of field surveys, through contracts or otherwise, by Federal, State, and private agencies, institutions, organizations, and individuals;

(5) to conduct supplementary research, as appropriate;

(6) to make recommendations to appropriate agencies with respect to the use of the latest technology, including geographic information systems and other computer-based data storage and retrieval systems;

(7) to further interactions between the scientific collection of biological data and the utilization of such data for conservation, management, and sustainable use;

(8) to publish information, such as floral and faunal treatises, resource inventories, atlases, and guides for practical use of biological information, and especially publications that synthesize information relevant to national goals of understanding and conserving biological diversity;

(9) to prepare, with the assistance of agencies and other sources, lists of biotic communities, species, and populations that appear to be in decline or in imminent danger of loss of viability, or are otherwise of special concern;

(10) to provide information, in cooperation with the Scientific Advisory Committee, useful to the Interagency Working Committee on Biological Diversity established under section 806 (hereafter in this Act referred to as the "Interagency Committee") in the preparation and implementation of the Federal strategy for

conservation of biological diversity described in section 807;

(11) to work closely with the national network of State natural heritage programs; and

(12) to raise additional funds as necessary to support the activities of the Center.

(c) STRUCTURE AND MEMBERSHIP.—

(1) GOVERNING BOARD.—The Center shall have a governing board, which shall set the policies for and direct the Center.

(2) MEMBERSHIP.—(A) The governing board shall consist of 9 members, including—

(i) 1 representative of the Smithsonian Institution;

(ii) 1 representative of the Fish and Wildlife Service;

(iii) 1 representative of the National Marine Fisheries Service;

(iv) 1 representative of State biological surveys;

(v) 1 representative of private organizations that maintain large data bases oriented toward biological conservation;

(vi) 2 scientists from nonprofit research institutions; and

(vii) 2 representatives from institutions with collections of biological specimens.

(B) Members listed under clauses (iv) through (vii) of subparagraph (A) shall be appointed by the President from a list of nominees recommended by the National Academy of Sciences.

(3) TERMS.—Members of the governing board shall serve for terms of 5 years, and may serve more than one term.

(4) DIRECTOR AND STAFF.—The governing board shall hire a Director for the Center, who shall hire such staff as are necessary to carry out the duties of the Center and to provide technical expertise.

(5) APPLICABILITY OF CERTAIN CIVIL SERVICE LAWS.—The staff of the Center shall be appointed subject to the provisions of title 5, United States Code, governing appointments in the competitive service, and shall be paid in accordance with the provisions of chapter 51 and subchapter III of chapter 53 of such title relating to classification and General Schedule pay rates.

(6) EXPERTS AND CONSULTANTS.—The Center may procure temporary and intermittent services under section 3109(b) of title 5 of the United States Code.

(7) STAFF OF FEDERAL AGENCIES.—Upon request of the Director, the head of any Federal agency is authorized to detail, on a reimbursable basis, any of the personnel of such agency to the Center to assist the Center in carrying out its duties under this Act.

(8) OBTAINING OFFICIAL DATA.—The Center may secure directly from any department or agency of the United States information necessary to enable it to carry out this Act. Upon request of the Director, the head of such department or agency shall furnish such information to the Center.

(9) GIFTS.—The Center may accept, use, and dispose of gifts or donations of services or property.

(10) MAILS.—The Center may use the United States mails in the same manner and under the same conditions as other departments and agencies of the United States.

(11) ADMINISTRATIVE SUPPORT SERVICES.—The Administrator of General Services shall provide to the Center on a reimbursable basis such administrative support services as the Director may request.

(12) REPORT.—The Director shall transmit to the President and the Congress an annual report which shall contain a description of the activities of the Center during the preceding year.

(d) CONTRACTS.—Any contract awarded by the Center shall be awarded after competitive review.

SEC. 806. INTERAGENCY WORKING COMMITTEE ON BIOLOGICAL DIVERSITY.

(a) ESTABLISHMENT.—There is established an Interagency Working Committee on Biological Diversity (the Interagency Committee).

(b) MEMBERSHIP.—The Interagency Committee shall consist of 1 representative each from—

(1) the Bureau of Land Management;
(2) the National Park Service;
(3) the Fish and Wildlife Service;
(4) the Forest Service;
(5) the Department of Defense;
(6) the Environmental Protection Agency;
(7) the National Marine Fisheries Service;
(8) the Council on World Environmental Policy;
(9) the National Science Foundation; and
(10) the Department of State.

(c) CHAIRMAN.—The member of the Interagency Committee representing the Council on World Environmental Policy shall serve as Chairman of the Interagency Committee.

(d) FUNCTIONS.—The functions of the Interagency Committee shall be—

(1) to coordinate Federal activities for conservation of biological diversity;

(2) to prepare and implement the Federal strategy for conservation of biological diversity described in section 807; and

(3) to prepare and implement an international strategy for global conservation of biological diversity.

SEC. 807. FEDERAL BIOLOGICAL DIVERSITY STRATEGY.

(a) DEVELOPMENT.—The Interagency Committee, with the advice and guidance of the Scientific Advisory Committee, shall develop a coordinated Federal strategy for the conservation of biological diversity (hereafter in this Act referred to as the "Strategy").

(b) CONTENTS.—The Strategy shall address—

(1) the responsibility of each Federal agency to conserve biological diversity;

(2) methods of interagency cooperation, such as bioregional management of ecosystems;

(3) Federal involvement in non-Federal sectors through mechanisms such as grants;

(4) conservation through protective measures to preserve existing biological diversity, and through active measures to restore biological diversity;

(5) identification of habitats of special concern and methods to protect them;

(6) prevention of anthropogenic biological extinctions;

(7) provisions for the continued functioning of ecosystem processes;

(8) maintenance of gene pools through combination of in situ and ex situ techniques;

(9) use of demonstration areas, such as biosphere reserves;

(10) enhancement of scientific knowledge through improved and more complete biological surveys;

(11) improvement of management techniques based on scientific knowledge;

(12) methods to encourage conservation-oriented thinking and ecological awareness in public and private decisionmaking;

(13) broad-based educational efforts regarding the importance of biological diversity and the need for conservation;

(14) consistency with the Strategy in international actions of Federal agencies; and

(15) development of criteria for evaluating the progress of Federal agencies toward implementing the Strategy.

(d) REPORTS.—(1) Within one year after the date of the enactment of this Act, the Interagency Committee shall submit to the Congress a report detailing progress made toward development of the Strategy.

(2) Within two years after the date of the enactment of this Act, the Interagency Committee shall submit to the Congress a report containing the completed Strategy, including written comments by the Scientific Advisory Committee and the public.

(3) At least once every two years after the submission of a report under paragraph (2), the Interagency Committee shall submit to the Congress a report detailing progress in the implementation of the Strategy, including written comments by the Scientific Advisory Committee and the public.

SEC. 808. GRANTS, RESEARCH, AND TRAINING.

(a) BIOLOGICAL DIVERSITY GRANTS.—

(1) GRANTS.—Each agency represented on the Interagency Committee may engage in partnership grants with public agencies, including State natural heritage programs, private individuals, and organizations for projects to maintain or restore biological diversity through research, resource management, personnel training, public education, or otherwise.

(2) SMALL-SCALE PROJECTS.—Grants issued under paragraph (1) shall include small-scale projects by private individuals and grassroots organizations.

(3) GUIDELINES AND REVIEW PROCEDURES.—Agencies issuing grants under this subsection shall cooperate through the Interagency Committee in setting guidelines and competitive review procedures for grant proposals.

(4) MATCHING FUNDS.—Federal funds made available for grants under this subsection must be matched on at least an equal basis by the grantee, except in the case where the grantee is a State.

(b) ENVIRONMENTAL RESEARCH AND TRAINING.—

(1) PRIORITY.—Each agency, other than the Council on World Environmental Policy, represented on the Interagency Committee shall give high priority to research and personnel training towards implementation of the Strategy.

(2) ADEQUACY ASSESSMENT.—Each agency, other than the Council on World Environmental Policy, represented on the Interagency Committee shall conduct an assessment of its environmental research and training programs to determine their adequacy for (A) long-term ecological research and monitoring, and (B) development of programs to train personnel in basic principles of ecology and systematics.

SEC. 809. NATIONAL SCIENTIFIC ADVISORY COMMITTEE ON BIOLOGICAL DIVERSITY.

(a) ESTABLISHMENT.—There is established a National Scientific Advisory Committee on Biological Diversity (the Scientific Advisory Committee), which shall be a permanent entity.

(b) MEMBERSHIP AND STRUCTURE.—

(1) MEMBERSHIP.—(A) The Scientific Advisory Committee shall consist of 15 members, including—

(i) the Director of the Center;

(ii) one representative of the governing board of the Center;

(iii) one representative of the Smithsonian Institution; and

(iv) 12 scientists, who are not employed by the United States, from nonprofit research institutions, nongovernmental organizations, and natural resource industries.

(B) Members listed under clause (iv) of subparagraph (A) shall be appointed by the President from a list of nominees recommended by the National Academy of Sciences. The President shall make such appointments so as to ensure that the Scientific Advisory Committee membership is diverse disciplinarily and geographically.

(2) TERM OF OFFICE.—(A) Except as provided in subparagraph (B), members of the Scientific Advisory Committee shall be appointed for 3-year terms, and no member may serve more than 2 consecutive terms.

(B) Of the members initially appointed under paragraph (1)(A)(iv), 4 shall be appointed for 1-year terms and 4 shall be appointed for 2-year terms.

(c) FUNCTIONS.—The functions of the Scientific Advisory Committee shall include—

(1) providing scientific and technical advice and counsel to the Interagency Committee in the preparation of the Strategy to ensure that the best possible scientific information is used in developing the Strategy;

(2) assisting in the coordination of interaction between the Interagency Committee and the Center;

(3) providing scientific and technical assistance in the evaluation of the impacts of proposed Federal actions on biological diversity;

(4) providing scientific and technical review of Federal progress toward implementing the Strategy; and

(5) providing a general reference and scientific and technical advisory resource for the Nation in matters relating to conservation of biological diversity.

SEC. 810. AUTHORIZATION OF APPROPRIATIONS.

(a) AUTHORIZATIONS.—There are authorized to be appropriated for the activities of the grants program under section 808 and for the activities of the Center under section 805—

(1) $5,000,000 for the fiscal year ending September 30, 1990;

(2) $10,000,000 for the fiscal year ending September 30, 1991; and

(3) $10,000,000 for the fiscal year ending September 30, 1992.

(b) LIMITATION.—Expenditures in any fiscal year of funds appropriated under this section for grants under section 808 shall not exceed 10 percent of the total amount appropriated under this section for such fiscal year. Funds appropriated under this section shall be in addition to sums authorized and appropriated under any other Act.

TITLE IX—REPLANTING AND CONSERVING THE WORLD'S FORESTS

SEC. 901. TROPICAL WOOD PRODUCTS.

The Congress finds that—

(1) uncontrolled logging of tropical woods for commercial applications is a major contributor to the growing depletion of the rain forests of Africa and Asia, and that this activity will in due course become a

new and major factor in the further depletion of the rain forests of Central and Latin America;

(2) the major markets for tropical woods are in Japan, the European Communities, and the United States, whose patterns of consumption therefore are part of the economics of rain forest depletion. Hence it follows that the major importing nations are themselves contributors to the problem and must be contributors to the solution;

(3) therefore Congress directs the Secretary of State to enter into negotiations with Japan and the European Communities for the purpose of reaching agreement on a Phased Tropical Hardwoods Agreement designed to progressively restrain consumption of tropical hardwoods, other than those harvested under regimes of sustained yield management, through auction quotas, consumption taxes, or other methods, as appropriate; and

(4) Congress further directs the Secretary of State to enter into discussions with Japan and the European Communities, for the purpose of establishing an international agreement in support of the organization of a special Tropical Forest Conservation Lending Facility, to be vested within the World Bank, supported by contributions from its members and others, for the purpose

of helping to finance the establishment of regimes of sustained yield management for tropical woods.

SEC. 902. ARRESTING GLOBAL DEFORESTATION.

Congress finds that—

(1) the process of deforestation and desertification are powerfully driven by the needs of impoverished peoples, forced to strip the land for fuel and subsistence; and

(2) these peoples, living in the dry, semi-arid regions of the world, could often be enabled to practice improved forms of cultivation, if they had access to relatively small sums of money or its equivalent;

(3) Congress directs the Director of AID to prepare an assessment of the potential for raising the productivity of small-holders and the costs thereof, on a country/specific basis;

(4) Congress further directs that this report will consider funding mechanisms to support these costs, including use of the Micro-Enterprise Act, as a vehicle. Specific attention should be given to the potential role of NGOs as effective channels for this form of assistance, to complement channels running through government authorities; and

(5) the Director of AID is also instructed to frame proposals for the expansion of regional microenterprise

lending focused on small-holding agriculture in environmentally stressed regions, to be supported by international participation through the World Bank.

SEC. 903. GLOBAL DEFORESTATION.

Congress finds that—

(1) the loss of forest cover, exclusive of the rain forest, is in itself a major threat to regional ecology and economies;

(2) reforestation would not only alleviate regional ecological and economic problems, but can also make an important contribution toward securing the global environment, by holding carbon which would otherwise be present in the atomsphere as carbon dioxide;

(3) although many countries are now engaged in reforesting, their efforts are not optimized but rather sharply constrained by available resources;

(4) it is the sense of the Congress that as many as one hundred and thirty million hectares might credibly be involved by the year 2000;

(5) Congress therefore directs the Director of AID to prepare a composite estimate of the full global potential for reforestation, its impact on regional ecological and economic problems, its effect on the global carbon-balance, and its estimated costs;

(6) the Congress further directs the Director of AID to prepare a proposal for the sharing of those costs within the international community; and

(7) said report is to be delivered by six months after enactment of this bill.

SEC. 904. PRESERVATION OF THE AMAZON BASIN.

Congress finds that—

(1) the Government of Brazil, responding to the compelling needs and aspirations of its people, is promoting the development of the Amazon Basin in a manner which seems certain not only to threaten Brazil's own natural endowment, but that of the entire planet;

(2) the Government of Brazil is aware of this danger, and would act to deal with it, but for the fact that its options are sharply constrained by severe problems in other sectors of its economy, aggravated by its heavy international debt;

(3) the Government of Brazil cannot be expected to act as conservator of a global resource, unless the international community is prepared to act responsibly;

(4) since this matter touches upon the dignity and sovereignty of the Brazilian people, the Government of Brazil should be encouraged to begin a process of urgent international consultation directed toward a pro-

gram for conserving the resources of the Amazon Basin;

(5) it is the sense of the Congress that the Secretary of State should, having sought parallel statements from the Governments of Japan and the European Communities, declare that the United States is ready to participate in these consultations at ministerial level, were Brazil to call for them;

(6) meanwhile, it is also the sense of the Congress that members of the international community including international lending institutions, should reassess their investment policies to assure that these do not contribute to the accelerated destruction of the Amazon Basin rain forest; and

(7) the Congress further directs United States directors of multilateral development banks and other development assistance institutions to urge restraint, pending the development of an approach which more fully blends Brazil's requirements for national development with global environmental imperatives.

TITLE X—INTERNATIONAL COOPERATION

SEC. 1001. FINDINGS.

The Congress finds that—

(1) complete elimination of chlorofluorocarbons and related chemicals which are destroying the Earth's protective ozone layer and adding to global temperature increases requires concerted international agreement and action;

(2) the most effective controls on emissions of carbon dioxide, hydrocarbons, oxides of nitrogen, methane and other trace gases which are increasing global temperatures will require concerted international agreement and action;

(3) international agreements to address some aspects of these global threats are already underway and include—

(A) an international protocol to reduce production and use of chlorofluorocarbons;

(B) an international agreement to reduce emissions and transboundary transport of oxides of sulphur;

(C) an international agreement to reduce emissions and transboundary transport of oxides of nitrogen;

(4) in the absence of such international cooperation and agreement, the interests of the United States will be directly and substantially threatened due to—

(A) damage to the domestic environment;

(B) damage to the national economy;

(C) increased international tension; and

(D) increased danger of international armed conflict.

SEC. 1002. INTERNATIONAL COOPERATION.

(1) The President is hereby directed to request that the United Nations promptly establish a temporary new agency to be headed by the director of the United Nations Environmental Program, to—

(A) coordinate international efforts to minimize and mitigate the effects of unavoidable environmental alterations; and

(B) provide financial, technical and other assistance to developing nations to facilitate improvements in their domestic standards of living while minimizing or eliminating contributions to global, continental and subcontinental scale environmental damages.

(2) The President is hereby directed to request that the United Nations establish a temporary program of forestation to—

(A) assist and encourage nations in halting activities which are resulting in destruction of the world's forests; and

(B) undertake a global program of reforestation.

(3) The President is hereby directed to instruct United States representatives to bilateral and multilateral assistance organizations other than the United Nations to review the activities of such organizations to assure that their actions and programs are consistent with the goals and objectives of this Act.

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II

101st CONGRESS
1st Session

S. 333

Entitled the "Global Environmental Protection Act of 1989".

IN THE SENATE OF THE UNITED STATES

February 2 (legislative day, January 3), 1989

Mr. Leahy (for himself and Mr. Jeffords) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

Entitled the "Global Environmental Protection Act of 1989".

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Global Environmental Protection Act of 1989".

SEC. 2. FINDINGS.

The Congress, recognizing the profound, irreversible and potentially catastrophic impacts of humanity's activities on the global atmosphere and the world's environment, and the inability of science to predict with certainty the consequences for humanity of any such changes, hereby declares

that each person has a responsibility and obligation to avoid contamination of the atmosphere.

TITLE I—ELIMINATION AND REGULATION OF GLOBAL CHANGE POLLUTANTS

PART A—CHLOROFLUOROCARBONS AND RELATED CHEMICALS

SECTION 101. SHORT TITLE.

This part may be cited as the "Act to Eliminate Chlorofluorocarbons and Related Chemicals".

SEC. 102. FINDINGS.

The Congress finds that—

(1) the best available scientific evidence shows that manufactured substances, including chlorofluorocarbons, are polluting the atmosphere and destroying stratospheric ozone, as well as contributing to global climate change, and other atmospheric modifications;

(2) no level of stratospheric ozone depletion or global climate change caused by human activities can be deemed safe;

(3) stratospheric ozone depletion will lead to increased incidence of solar ultraviolet radiation at the surface of the Earth;

(4) increased incidence of solar ultraviolet radiation will cause increased rates of disease in humans

(including skin cancer), threaten food crops, and otherwise damage the natural environment;

(5) stratospheric ozone depletion and global climate change from continued emissions of chlorofluorocarbons and other halogenated carbons with ozone depleting potential, and emissions of other gases, imperil human health and the environment worldwide;

(6) in order to stabilize and eventually reduce concentrations of chlorine and bromine in the stratosphere, to conserve the stratospheric ozone layer (an exhaustible natural resource), and to reduce the extent of global climate change—

(A) emissions of chlorofluorocarbons and other substances covered by this Act, including halogenated carbons with ozone depleting potential, should be terminated rapidly, and

(B) it is necessary to control international trade in substances covered by this Act and products containing or made with processes that use such substances;

(7) the highest priority must be given to developing and deploying safe substitutes to replace ozone depleting substances within six years; and

(8) the United States needs to develop and deploy safe substitutes to replace ozone depleting substances

in order to demonstrate to the world its commitment to protect the stratosphere.

SEC. 103. OBJECTIVES AND NATIONAL GOAL.

(a) The objectives of this Act are to restore and maintain the chemical and physical integrity of the Earth's atmosphere and to protect human health and the global environment from all known and potential dangers due to atmospheric or climatic modification, including stratospheric ozone depletion, that is or may be related to the chlorofluorocarbons or other substances covered by this Act by—

(1) reducing significantly the production and emission into the atmosphere of pollutants caused by human activities,

(2) promoting the rapid development and deployment of alternatives to the use of the chlorofluorocarbons and other substances covered by this Act, and

(3) promoting additional scientific research on atmospheric or climatic modification, including stratospheric ozone depletion, and on the known and potential adverse effects therefrom on human health and the global environment.

(b) In order to achieve the objectives of this Act, it is the national goal to eliminate atmospheric emissions of manufactured substances with ozone depleting potential, including chlorofluorocarbons and other halogenated carbons with ozone depleting potential, and to reduce significantly emissions of other gases caused by human activities that are likely to affect adversely the global climate.

SEC. 104. DEFINITIONS.

As used in this Act:

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "household appliances" means noncommercial personal effects, including air-conditioners, refrigerators, and motor vehicles.

(3) The term "import" means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.

(4) The term "manufactured substances" means any organic or inorganic chemical substances of a particular molecular identity, or any mixture, that has been manufactured for commercial purposes.

(5) The term "medical purposes" means medical devices and diagnostic products (A) for which no safe substitute has been developed and (B) which, after notice and opportunity for public comment, has been

approved and determined to be essential by the Commissioner of the Food and Drug Administration, in consultation with the Administrator.

(6) The term "person" means an individual, corporation (including a government corporation), partnership, firm, joint stock company, trust, association, or any other private entity, or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State or political subdivision thereof (including any interstate body), or of any foreign government (including any international instrumentality).

(7) The term "substances covered by this Act" means those substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion, and are listed under subsections (a) or (b) of section 105.

SEC. 105. LISTING OF REGULATED SUBSTANCES.

(a) SUBSTANCES TO BE PHASED-OUT.—Within sixty days after enactment of this Act, the Administrator shall publish a priority list of manufactured substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion. The initial list shall include chlorofluorocarbon-11, chlorofluorocarbon-12, chlorofluorocarbon-113, halon-1211, and halon-1301.

(b) OTHER REGULATED SUBSTANCES.—Simultaneously with publication of the priority list, the Administrator shall create a list of other manufactured substances which, in the judgment of the Administrator, meet the criteria set forth in the first sentence of subsection (a). The list of other substances shall be subject to the limitations on ozone depletion potential under section 109 of this Act and shall include chlorofluorocarbon-22, chlorofluorocarbon-114, chlorofluorocarbon-115, carbon tetrachloride, methyl chloroform, and methylene chloride. At least annually thereafter, the Administrator shall publish a proposal to add to such list each other manufactured substance which, in the judgment of the Administrator, meets the criteria set forth in the first sentence of subsection (a). Within one hundred and eighty days of any such proposal, after allowing an opportunity for public comment, the Administrator shall promulgate a regulation adding each such substance to the list, unless the Administrator determines that such substance clearly does not meet the criteria set forth in the first sentence of subsection (a).

(c) OZONE DEPLETION FACTOR.—Simultaneously with publication of the lists or additions thereto under this section, and at least annually thereafter, the Administrator shall assign to each listed substance a numerical value representing the ozone depletion potential of such substance, on a mass (per kilogram) basis, as compared with chlorofluorocarbon-11. The numerical value shall, for the purposes of section 109, constitute the ozone depletion factor of each such substance. Until the Administrator promulgates regulations under this subsection, the following ozone depletion factors shall apply:

SUBSTANCE	OZONE DEPLETING FACTOR
Chlorofluorocarbon-11	1.0
Chlorofluorocarbon-12	1.0
Chlorofluorocarbon-22	0.05
Chlorofluorocarbon-113	0.78
Carbon tetrachloride	1.06
Methyl chloroform	0.10
Halon-1211	2.69
Halon-1301	11.43

SEC. 106. REPORTING REQUIREMENTS.

(a) PRIORITY LIST.—Within ninety days after enactment of this Act, each person producing a substance listed pursuant to subsection (a) of section 105 shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during calendar year 1987. Not less than annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive twelve-month period until such producer ceases production of the substance. Each such report shall be signed and attested by a responsible corporate officer.

(b) OTHER REGULATED SUBSTANCES.—Within ninety days of the date on which a substance is placed on the list under subsection (b) of section 105, each person shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during the twelve months preceding the date of listing. Not less than annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive twelve-month period until such producer ceases production of the substance. Each such report shall be signed and attested by a responsible corporate officer.

SEC. 107. PRODUCTION PHASEOUT.

(a) Effective January 1, 1990, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than that produced by such person during calendar year 1987.

(b) Effective January 1, 1991, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 75 per centum of that produced by such person during calendar year 1987.

(c) Effective January 1, 1992, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 50 per centum of that produced by such person during calendar year 1987.

(d) Effective January 1, 1994, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 5 per centum of that produced by such person during calendar year 1987.

(e) Effective January 1, 1996, it shall be unlawful for any person to produce or release a substance listed pursuant to subsection (a) for any use other than medical purposes.

(f) Effective January 1, 2000, it shall be unlawful for any person to produce or release a substance listed pursuant to section 105 for any use other than medical purposes.

SEC. 108. LIMITATION ON USE.

(a) Effective January 1, 1995, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (a) of section 105 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, and, for a period not to exceed ten years after January 1, 1995, to maintain and service household appliances.

(b) Effective January 1, 2000, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (b) of section 105 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, and, for a period not to extend beyond January 1, 2005, to maintain and service household appliances. For purposes of this subsection and subsection 107(f), a manufacturing process utilizing such a substance solely as an intermediate in a manufacturing process in which the substance is wholly consumed and none is released, does not constitute a use.

SEC. 109. LIMITATION ON OZONE DEPLETION POTENTIAL.

(a) Effective January 1, 1990, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than that produced by such person during calendar year 1987.

(b) Effective January 1, 1991, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than 75 per centum of that produced by such person during calendar year 1987.

(c) Effective January 1, 1992, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion potential greater than

50 per centum of that produced by such person during calendar year 1987.

(d) Effective January 1, 1996, it shall be unlawful for any person to produce a substance listed pursuant to section 105(a) for any use other than medical purposes.

(e) The Administrator shall promulgate regulations, after notice and opportunity for public comment, which require each producer to reduce its production of—

(1) a substance listed under subsection (a) of section 105 more rapidly than the schedule provided under this Act; or

(2) a substance listed under subsection (b) of section 105 on a specific schedule not otherwise provided for in this Act.

if the Administrator determines that such revised or specific schedule (A) based on new information regarding the harmful effects on the stratosphere or climate which may be associated with a listed substance, is necessary to protect human health and the environment or (B) based on the availability of substitutes for a listed substance, is attainable. Any person may petition the Administrator to issue such regulations. The Administrator shall issue such regulations within one hundred and eighty days after receipt of any such petition, unless the Administrator denies the petition.

SEC. 110. PRODUCTION PHASE-OUT EXCEPTION FOR NATIONAL SECURITY.

(a) The President may issue such orders regarding production and use of halon-1211 and halon-1301 at any specified site or facility as may be necessary to protect the national security interests of the United States if the President personally finds that adequate substitutes are not available and that the production and use of such substance is necessary to protect such national security interests. Such orders may include, where necessary to protect such interests, an exemption from any requirement contained in this Act. The President shall notify the Congress within thirty days of the issuance of an order under this paragraph providing for any such exemption. Such notification shall include a statement of the reasons for the granting of the exemption. An exemption under this paragraph shall be for a specified period which may not exceed one year. Additional exemptions may be granted, each upon the President's issuance of a new order under this paragraph. Each such additional exemption shall be for a specified period which may not exceed one year. No exemption shall be granted under this paragraph due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation.

SEC. 111. CERTIFICATION OF EQUIVALENT PROGRAMS.

(a) IMPORTS.—Effective twelve months after the date on which a substance is placed on the priority list pursuant to section 105, it shall be unlawful for any person to import such substance, any product containing such substance, or any product manufactured with a process that uses such substance unless the Administrator, in consultation with the Secretary of State (the Secretary), has published a decision, after notice and opportunity for public comment, certifying that the nations in which such substance or product was manufactured and from which such substance or product is imported have established and are fully implementing programs that require reduced production of such listed substance, and limit production of other substances covered by this Act, on a schedule and in a manner that is at least as stringent as the reduction schedule for, and limitations on, domestic production which apply under this Act. The prohibition on the import of any product manufactured with a process that uses a substance listed under subsection (a) of section 105 shall include, after notice and opportunity for public comment, any product which the Administrator has reason to believe may have been manufactured with a process that uses such substance. The Administrator's decision that a product may have been manufactured with a process that uses such substance shall constitute a rebuttable presumption.

(b) CERTIFICATION OF NATIONAL PROGRAM.—The Administrator shall not certify any national program under subsection (a) unless it is determined that—

(1) the Nation has adopted legislation or regulations which give the reduction schedule for each listed substance the force of law; and

(2) the legislation or regulations include reporting requirements and enforcement provisions no less stringent than those specified in this Act, and that the information contained in such reports is available to the Administrator and the Secretary.

(c) REVOCATION.—At least annually, the Administrator, in consultation with the Secretary, shall review each certification made under this section and shall revoke such certification, after notice and opportunity for public comment, unless it is determined that the conditions of subsections (a) and (b) remain satisfied and that the reduction schedule for each listed substance is in fact being carried out in such nations. Any such revocation shall take effect one hundred and eighty days after notice of the revocation has been published.

(d) ALLOCATION.—Any person who imports a substance covered by this Act or a product containing such substance shall, for the purposes of section 107 (production phaseout for priority list) and section 109 (limitation on ozone depletion potential), shall be deemed to have produced an equivalent amount of such substance on the date of such importation.

SEC. 112. LABELING.

Effective ninety days after the date on which a substance is placed on a list maintained under subsection (a) or (b) of section 105, no container in which such substance is stored or transported, no product containing such substance, and no product manufactured with a process that uses a listed substance shall be introduced into interstate commerce unless it bears a label stating either of the following, as appropriate—

(1) Contains (insert name of listed substance) a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate.

(2) Manufactured with (insert name of listed substance), a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate.

The Administrator shall issue regulations to implement the labeling requirements of this section within six months after enactment of this section, after notice and opportunity for public comment. Such regulations shall require all containers and products which are subject to this section and introduced or reintroduced into commerce later than ninety days after promulgation of such regulations to bear the appropriate label. Unless and until such regulations have been promulgated and become effective, the required label shall be permanently affixed on the face of such product, with the lettering and background in contrasting colors and the letters themselves not less than two inches in height (or 20 per centum of the height of the product which is less than four inches in height). Neither the labeling requirement nor any other provision of the Global Environmental Protection Act of 1989, including the Act as a whole, shall constitute, in whole or part, a defense to liability or a cause for reduction in damages in any suit, whether civil or criminal, brought under any law, whether Federal or State, other than a suit for failure to comply with the labeling requirements of this section.

SEC. 113. MANUFACTURE AND DISPOSAL.

(a) Effective January 1, 1991—

(1) A substance listed pursuant to this Act shall be deemed to meet the requirements of section 3001 of the Resource Conservation and Recovery Act.

(2) A substance listed pursuant to this Act shall be disposed of only through incineration or other means which assures 99.999 per centum destruction of such substance.

(3) Any appliance, machine or other goods containing a listed substance in bulk (including but not

limited to refrigerators and air-conditioners) shall be accepted for disposal only by persons licensed to accept such goods and shall be disposed of only after such substance has been removed from confinement and destroyed pursuant to the requirements of this Act. Unless and until regulations establishing a program for approving, licensing, and assuring the financial responsibility of persons to accept goods containing such substances, only governmental entities, or their agents, contractors or employees, are authorized to do so.

(4) No listed substance shall be vented into the atmosphere or otherwise released in a fashion which permits it to enter the environment in other than de minimus quantities.

(5) Any product in which a listed substance has been incorporated so as to constitute an inherent element of such product, including but not limited to rigid and soft foams, shall be disposed of only through incineration or other means which result in not less than 99.999 per centum destruction.

(b) Effective July 1, 1991—

(1) No person shall manufacture, process, distribute in commerce or otherwise use (except for medical purposes) any listed substance in any manner other than a totally enclosed manner. "Totally enclosed"

means that during the lifetime of the good in question not more than 5 per centum of the original charge or volume of such substance will be released during the course of ordinary and customary use of such good, including repairs or disposal.

(2) No person shall manufacture, process, distribute in commerce or otherwise use (except for medical purposes) a listed substance in a totally enclosed manner without—

(A) installing on such device a servicing aperture which will allow service and repair of such good with release of only de minimus amounts of such substance,

(B) assuring the availability and actual use of servicing equipment adequate to assure the achievement of no more than a de minimus release of such substance.

(c) For purposes of this section a "de minimus" amount is 0.050 per centum of the total charge of such substance or five pounds, whichever is less, released during a period of twelve months.

PART B—CARBON DIOXIDE

SEC. 114. SHORT TITLE.

This part may be cited as the "Act to Reduce and Stabilize Atmospheric Concentrations of Carbon Dioxide".

SEC. 115. FINDINGS.

The Congress finds that—

(1) there is widespread agreement, and no credible scientific dispute, that increases in atmospheric concentrations of carbon dioxide will increase the temperature of the planet;

(2) current emissions of carbon dioxide are approximately seventy times as great as those a century ago;

(3) average concentrations of carbon dioxide in the absence of major contributions from human activity have ranged between one hundred and eighty and two hundred and eighty parts per million;

(4) the current concentration of carbon dioxide is approximate three hundred and eighty parts per million;

(5) concentrations of carbon dioxide because of human activity are increasing at the rate of about 4 per centum per decade;

(6) there has already been an observed increase in globally averaged temperature of 0.7 degrees Centigrade during the last century;

(7) increases in North Atlantic Ocean temperatures of 0.2 to 0.3 degrees Centigrade have been measured;

(8) ocean water levels have increased;

(9) the years 1981, 1983, and 1987 are the hottest on record;

(10) elevated temperatures and drought are now prevailing in many of the world's agricultural areas;

(11) all of these changes are consistent with predictions that increases in carbon dioxide will lead to global temperature increases;

(12) further temperature increases may be experienced by the year 2030 if concentrations of carbon dioxide and other trace gases continue to accelerate at current rates;

(13) even with stringent and immediate controls, global average temperatures may increase 1.0 to 2.5 degrees Centigrade;

(14) scientists are unable to state with certainty whether the global environment will respond predictably to further temperature increases, especially if they occur in combination with other alterations in the atmosphere and oceans;

(15) probable consequences of further warming will include, but cannot with certainty be said to be limited to, the following:

(A) Sea level rise of between one and four feet, accompanied by widespread flooding, estuary destruction, and increased frequency of extreme storm events such as cyclones;

(B) Disappearance of many tree and plant species in areas where they now predominate;

(C) Widespread and endemic drought in many areas of the world which now supply the bulk of humanity's foods;

(16) to minimize further climate destruction and mitigate that which is already inevitable will require that atmospheric concentrations of carbon dioxide be stabilized;

(17) the level of carbon dioxide emission reductions necessary to achieve atmospheric stabilization is uncertain, but has been estimated by some to be 50 per centum or more;

(18) given the uncertainty of the response of the global environment to further temperature increases, the prudent policy is to strive to minimize carbon dioxide emissions through all possible means rather than establish an arbitrary goal;

(19) between 20 and 25 per centum of the worldwide emissions of carbon dioxide originate in the United States;

(20) technologies and practices exist which could reduce carbon dioxide emissions substantially;

(21) the adoption of these technologies and practices would increase the efficiency and competitiveness of the United States business and industrial sector, decrease the Nation's dependence on foreign supplies of fuel, protect the agricultural sector, preserve the natural environment, and simultaneously achieve reductions in other chemicals which cause acid rain, ground level ozone, and fine particle pollution; and

(22) therefore, the United States can protect the global environment directly by reducing emissions of carbon dioxide emissions and indirectly protect such environment by demonstrating the technologies and practices which can be applied elsewhere.

SEC. 116. STATIONARY SOURCE CONTROLS.

(a)(1) Not later than January 1, 1991, the Administrator of the Environmental Protection Agency shall revise the standards under section 111(b) of the Clean Air Act to require—

(A) that such standards be expressed in terms of carbon dioxide emitted per unit of electricity output;

(B) that such standards applicable to fossil fuel fired electric utility generating units provide for emissions of carbon dioxide not to exceed the following:

(i) effective January 1, 1991, six hundred and ten pounds of carbon dioxide per million British thermal units of heat output;

(ii) effective January 1, 2001, four hundred and thirty-five pounds of carbon dioxide per million British thermal units of heat output; and

(iii) effective January 1, 2011, two hundred and eighty pounds of carbon dioxide per million British thermal units of heat output.

For purposes of this section, "heat output" includes usable energy, whether electric or thermal, measured at the point of distribution to residential, commercial, or other customers.

(2) Effective January 1, 1996, each fossil fuel fired stationary source shall comply with the standards established under section 111(b) of the Clean Air Act for new sources within such class or category, in the case of each electric utility generating source, on and after the date thirty years following the completion of construction of such source and, in the case of each other source, on and after the date thirty-five years following the completion of construction of such source.

(3) To the extent that the emissions rate limits required by this section and section 111 of the Clean Air Act through increases in combustion, generation, transmission, and utilization efficiencies, such program for achieving reductions

shall constitute enforceable continuous emissions reduction measures, enforceable by the Federal Government, States other than those in which the emissions occur, and citizens under section 304 of the Clean Air Act.

SEC. 117. MOBILE SOURCE CONTROLS.

(a) The Clean Air Act is amended as follows:

(1) In section 202(a)(3)(A)(i) inserting before the period at the end of the first sentence, the following: "and, for emissions of carbon dioxide, during and after model year 1991".

(2) in section 202(a)(3)(A)(ii) inserting the following new clause:

"(III) 1991 in the case of carbon dioxide shall contain standards which require a reduction of at least 10 per centum in 1991; at least 25 per centum in 1996; at least 50 per centum in 2001; and at least 75 per centum in 2011.".

(3) inserting in section 202(b)(1)(B) the following new language immediately before the period:

"The regulations under subsection (a) applicable to emissions of carbon dioxide from light duty vehicles and engines shall provide that emissions of carbon dioxide may not exceed—

"three hundred and sixty grams of carbon dioxide per vehicle mile from light-duty vehicles and engines manufactured during and after model year 1991;

(b) Section 202 of the Clean Air Act is amended by adding the following new subsection:

"(h) Each emission standard under this section shall apply to and be met by each and every vehicle or engine sold, offered for sale, introduced into commerce, or imported, and may not be met or complied with by the average of the performance of various vehicles, engines, engine families, or models manufactured by the same manufacturer.".

(c) Section 206(a) of the Clean Air Act is amended by adding the following new paragraph:

"(4) Not later than one year after the enactment of this paragraph, the Administrator shall promulgate regulations adding an idle test mode to the Federal Test Procedure for light-duty vehicles as in effect on such date of enactment. Such modified test procedure shall be used for the certification of light-duty vehicles and engines manufactured during or after model year 1991.".

(d) Section 206(b)(2)(A) of the Clean Air Act is amended by adding the following new clause:

"(iii) A certificate of conformity shall be suspended or revoked under clause (i) with respect to a class or subclass of vehicles if that class or subclass fails a sampling plan having an acceptance quality level of 10 per centum.".

"three hundred grams per mile for light-duty vehicles and engines manufactured during and after model year 1996;

"two hundred grams per mile for light-duty vehicles and engines manufactured during and after model year 2001; and,

"one hundred grams per mile for light-duty vehicles and engines manufactured during and after model year 2011.".

SEC. 118. RESIDENTIAL CONTROLS.

(a) Not later than January 1, 1992, the Administrator shall promulgate regulations identifying the best available residential control technology available for central furnaces, air-conditioners, and hot water heaters designed and sold for installation in single-family dwellings. For purposes of this section, "best available residential control technology" means that technology which achieves in a unit which is commercially available the maximum degree of reduction of emissions of carbon dioxide, whether directly through combustion or indirectly through consumption of electrical energy. Unless and until such regulations are promulgated and become effective, the best available control technology shall be deemed to be as follows:

(1) for furnaces, that which achieves an AFUE of 0.90 for oil, an AFUE of 0.95 for gas and a COP of 2.6 for electric heat pumps;

(2) for central air-conditioners, that which achieves an Energy Efficiency Rating of not less than 15.0; and

(3) for hot water heaters, that which achieves an EF of 64 for gas and 96 for electricity.

(b) Each new single-family dwelling for which a building permit is issued on or after January 1, 1993, which is equipped with a central furnace, central air-conditioner, or hot water heater, shall be equipped only with one which meets or exceeds the emission limitation achieved by the best available residential control technology.

(c) Effective January 1, 1994, each replacement central furnace, central air-conditioner, or hot water heater installed in a single-family dwelling shall meet or exceed the emissions limit achieved by the best available residential control technology.

(d) Not later than January 1, 1991, the Secretary of the Treasury shall recommend to the Congress means of encouraging the replacement of central furnaces, air-conditioners and water heaters and otherwise minimizing the emissions of carbon dioxide and other greenhouse gases from residential units through a system of tax or other incentives.

PART C—GROUND LEVEL OZONE

SEC. 119. SHORT TITLE.

This part may be cited as the "Act to Minimize Ground Level Ozone".

SEC. 120. FINDINGS.

The Congress finds that—

(a) ground level ozone, and the pollutants which lead to its formation, contribute substantially to the following damages—

(1) increases in global average temperatures and the consequent threats to humanity and the global environment, as described in greater particularity in the findings accompanying part B;

(2) widespread and substantial damage to crops and other vegetation, including the forests of eastern North America and Europe;

(3) injury to human health, including probable long-term damage comparable to that resulting from tobacco smoking;

(4) acidification of the soils and waters of North America and Europe;

(b) concentrations of free tropospheric ozone have doubled to quadrupled in the last century;

(c) ground level ozone is formed by the reaction of volatile organic chemicals with oxides of nitrogen in the presence of sunlight;

(d) elevated temperatures and extended summer seasons likely to accompany the global temperature increases will cause increased production of ground level ozone;

(e) virtually all oxides of nitrogen and the majority of the volatile organic chemicals result from human activities;

(f) technologies and practices exist to reduce substantially emissions of oxides of nitrogen and volatile organic chemicals; and

(g) in the absence of a program to minimize emissions of volatile organic chemicals and oxides of nitrogen, emissions and concentrations of these pollutants are projected to increase.

SEC. 121. STATIONARY SOURCE CONTROLS: OXIDES OF NITROGEN.

(a)(1) Not later than January 1, 1991, the Administrator shall propose revised standards of performance pursuant to section 111 of the Clean Air Act for emissions of oxides of nitrogen (including nitrous oxide) from fossil fuel-fired steam or electricity generating units, including both electric utility and nonutility units. Not later than January 1, 1992, the Administrator shall promulgate such revised standards of performance. Such revised standards of performance shall reflect improvements in methods for the reduction of emissions of oxides of nitrogen and shall require an emissions rate equal to or less than 0.1 pound per million British thermal units of heat input or a reduction of not less than 90 per centum from an uncontrolled state unless the Administrator determines that such limits are technologically infeasible. Unless and until such revised standards are promulgated and become final, the application of selective catalytic reduction to achieve an emissions reduction of 90 per centum shall be deemed to be such standard.

(2) Not later than January 1, 1991, the Administrator shall propose standards of performance pursuant to section 111 of the Clean Air Act for emissions of oxides of nitrogen (including nitrous oxide) from large stationary diesel and turbine engines. Not later than January 1, 1992, the Administrator shall promulgate such standards of performance. Unless and until such revised standards are promulgated and become final, the application of selective catalytic reduction to achieve an emissions reduction of 90 per centum shall be deemed to be such standard.

(b) Effective January 1, 1994, each unit of a major stationary source that is a fossil fuel-fired steam generating unit shall achieve an emissions rate of oxides of nitrogen that does not exceed, on an annual average basis, 1.0 pound per million British thermal units of heat input for cyclone boilers, 0.5 pound per million British thermal units of heat input for wall-fired boilers, and 0.4 pound per million British thermal units of heat input for tangential-fired and other boilers.

SEC. 122. STATIONARY SOURCE CONTROLS: HYDROCARBONS.

(a) Not later than two years after the enactment of this subsection, the Administrator of the Environmental Protection Agency shall publish control technique guidelines consistent with section 171(6) of the Clean Air Act for the following categories of sources:

(A) wood furniture coating;

(B) autobody refinishing;

(C) metal rolling;

(D) SOCMI distillation; and

(E) SOCMI batch process.

(b) SECTION 304(a), part A of title I of the Clean Air Act, is amended by adding the following new section:

"HYDROCARBON EMISSION CONTROLS

"SEC. 130. (a) Not later than two years after the enactment of this section, the Administrator shall promulgate regulations establishing emission limitations, standards of performance, or standards for product composition or application for hydrocarbon emissions associated with the following categories of sources—

"(1) commercial solvents;

"(2) consumer solvents;

"(3) architectural coatings;

"(4) pesticide application;

"(5) traffic marking coatings; and

"(6) metal parts coatings in military specification applications and aerospace industry applications.

"(b) With respect to existing sources or activities not subject to section 111 or section 173, the regulations under this section shall require the degree of emission reduction or control, at a minimum, achievable through the adoption of reasonably available control technology, as defined in section 171(6). In developing regulations under subsection (a)(1) and (a)(6) of this section, the Administrator shall consult with the affected industry, including the industries procuring such parts, and with representatives of the Department of Defense, the Federal Aviation Administration, and the National Aeronautics and Space Administration involved in the establishment of specifications for such parts or coatings.

"(c) For the purposes of this Act, any requirement of a regulation promulgated under this section shall be deemed a requirement of an applicable implementation plan.".

(b) Section 116 of the Clean Air Act is amended by striking "111 or 112" and inserting in lieu thereof "111, 112, or 130".

(c) Effective January 1, 1996, each major stationary source of hydrocarbons shall comply with the standards established under section 111(b) of the Clean Air Act for new sources within such class or category, on and after the date thirty-five years following the completion of construction of such source.

SEC. 123. MOBILE SOURCE CONTROLS.

VEHICLE EMISSION STANDARDS

SEC. 301. (a) Section 202(b)(1)(A) of the Clean Air Act is amended by adding at the end thereof the following new sentence: "The regulations under subsection (a) applicable to emission of hydrocarbons from light-duty vehicles and engines manufactured during and after model year 1993 shall contain standards which provide that such emissions may not exceed 0.25 gram per vehicle mile.".

(b) Section 202(b)(1)(B) of the Clean Air Act is amended by adding at the end thereof the following new sentence: "The regulations under subsection (a) applicable to emissions of oxides of nitrogen from light-duty vehicles and engines manufactured during and after model year 1991 shall contain standards which provide that such emissions may not exceed 0.4 gram per vehicle mile.".

(c) Section 202(b)(1) of the Clean Air Act is amended by adding the following new paragraph:

"(D) The Administrator shall promulgate regulations under subsection (a) applicable to emissions of particulates from light-duty vehicles and engines manufactured during and after model year 1991, and such regulations shall contain standards which provide that such emissions, may not exceed 0.08 gram per vehicle mile.".

(d) Section 202(a)(3) of the Clean Air Act is amended by inserting after subparagraph (E) the following new subparagraphs and redesignating succeeding subparagraphs accordingly:

"(F) Regulations under paragraph (1) applicable to emissions of oxides of nitrogen from heavy-duty vehicles and engines shall contain standards that provide that such emissions shall not exceed 4.0 grams per brake horsepower-hour for vehicles manufactured during and after model year 1992 and that such emissions shall not exceed 1.7 grams per brake horsepower-hour for vehicles manufactured during and after model year 1996. Regulations applicable to emissions of particulates from heavy-duty diesel vehicles and engines shall require that such emissions may not exceed 0.1 gram per brake horsepower-hour, beginning in model year 1992 with respect to buses, and in model year 1995 with respect to other heavy-duty diesel vehicles and engines.

"(G) Regulations under paragraph (1) applicable to emissions from light-duty trucks and engines manufactured during and after model year 1991 shall contain standards that provide that such emissions may not exceed 0.5 gram per vehicle mile of oxides of nitrogen, 0.5 gram per vehicle mile of hydrocarbons, 0.08 gram per vehicle mile of particulates, and 5.0 grams per vehicle mile of carbon monoxide. Such regulations shall require that light-duty trucks and engines manufactured during and after model year 1991 comply with the standard for emissions of carbon monoxide regardless of the altitude at which they are sold. For the purposes of this subparagraph, the terms 'light-duty truck' and 'light-duty truck and engine' means any motor vehicle (including the engine thereof) with a gross vehicle weight (as determined under regulations promulgated by the Administrator) of eight thousand five hundred pounds or less and a curb weight of six thousand pounds or less (as determined under regulations promulgated by the Administrator) and which—

"(i) is designed primarily for purposes of transportation of property or is a derivation of such a vehicle,

"(ii) is designated primarily for transportation of persons and has a capacity of more than twelve persons, or

"(iii) has special features enabling off-street or off-highway operation and use.

For the purposes of this section, any motor vehicle with a gross vehicle weight of six thousand pounds or less shall be a light-duty vehicle.".

(e) Section 202(a)(3)(H) of the Clean Air Act (as redesignated by this Act) is amended by adding the following new sentence: "Regulations under this section applicable to exhaust and evaporative emissions from motorcycles and motorcycle engines manufactured during and after model year 1993 shall contain standards that provide that such emissions, in the case of motorcycle engines with a displacement of less than seven hundred cubic centimeters, may not exceed 2.0 grams per vehicle mile of hydrocarbons, 17.6 grams per vehicle mile of carbon monoxide, and 2.0 grams per test of evaporative emissions, and in the case of motorcycle engines with a displacement of seven hundred cubic centimeters or more, may not exceed 3.6 grams per vehicle mile of hydrocarbons, 17.6 grams per vehicle mile of carbon monoxide, and 4.0 grams per test of evaporate emissions.".

(f) Section 202(a)(6) of the Clean Air Act is amended to read as follows:

"(6) Regulations under this section applicable to vehicles manufactured during and after model year 1992 shall require the use of onboard hydrocarbon control technology to recover emissions from the fueling of such vehicles. Such onboard hydrocarbon control technology shall be designed to accommodate all available fuels.".

(g) Section 209(b)(1) of the Clean Air Act is amended by striking ", in the aggregate,".

(h)(1) Section 202(b)(1) of the Clean Air Act is further amended by adding the following new paragraph:

"(E) The Administrator shall promulgate regulations under subsection (a) applicable to emissions of formaldehyde from light-duty vehicles and engines manufactured during and after model year 1991 which may be fueled, in whole or in part, by fuels other than gasoline. In no event may such regulations permit emissions of formaldehyde at a higher rate than from comparable gasoline-fueled vehicles.".

(2) Section 202(a)(3) of the Clean Air Act is further amended by adding at the end thereof the following new subparagraph:

"(I) The Administrator shall promulgate regulations under subsection (1) applicable to emissions of formaldehyde (i) from heavy-duty vehicles and engines and (ii) from light-duty trucks and engines manufactured during and after model year 1992 which may be fueled, in whole or in part, by fuels other than gasoline. In no event may such regulations permit emissions of formaldehyde at a higher rate than from comparable gasoline-fueled vehicles.".

(i) Section 202 of the Clean Air Act is amended by adding the following new subsection:

"(g) The Administrator shall promulgate regulations applicable to motor vehicle and other engines manufactured during and after model year 1992 that prohibit the manufacture, sale, or introduction into commerce of any engine that requires leaded gasoline.".

(j) Section 202(a) of the Clean Air Act is amended by adding the following new paragraph:

"(7)(A) To augment existing regulations controlling carbon monoxide emissions under temperatures between 68 and 86 degrees Fahrenheit, the Administrator shall prescribe regulations under paragraph (1) of this subsection applicable to emissions of carbon monoxide over a temperature range of 20 to 68 degrees Fahrenheit from light-duty vehicles and light-duty trucks manufactured during and after model year 1991.

"(B) Regulations under subparagraph (A) shall require a reduction of at least 90 per centum from the average emissions from light-duty gasoline-fueled vehicles and trucks manufactured in model year 1970 to a level not to exceed 6.2 grams per vehicle mile of carbon monoxide at 20 degrees Fahrenheit. Demonstration of compliance shall be determined under regulations promulgated by the Administrator and may be based on testing of randomly selected engine families.".

ASSURANCE OF IN-USE COMPLIANCE

SEC. 302. (a)(1) Section 202(d)(1) of the Clean Air Act is amended by striking "five years or of fifty thousand miles" and inserting in lieu thereof "ten years or of one hundred thousand miles".

(2) The amendment made by this subsection shall take effect with respect to light-duty vehicles and engines manufactured during and after model year 1991.

(e)(1) Section 207(c)(1) of the Clean Air Act is amended by striking the word "properly" each time it occurs and inserting in lieu thereof "normally".

(2) Section 207(c) of the Clean Air Act is amended by adding the following new paragraphs:

"(4) In making determinations of nonconformity under this subsection, the Administrator shall take into account information collected under any State vehicle emission control inspection and maintenance program. Any State in which such a program is operating may petition the Administrator to make a determination of nonconformity under paragraph (1) on the basis of information collected in such program. The Administrator shall act upon such petition within sixty days of receipt of such petition.

"(5) For the purpose of paragraph (1), the phrase 'normally maintained and used' means the maintenance and use ordinarily to be expected in the hands of the ultimate purchasers, not necessarily in accordance with instructions under paragraph (3), but not including intentional misfueling or intentional violations of section 203(a)(3).".

(3) Section 207(c) of the Clean Air Act is further amended by adding the following new paragraph at the end thereof:

"(6) Not later than one hundred and eighty days after enactment of the Clean Air Standards Attainment Act of

1987, the Administrator shall establish at least one testing center in addition to the existing two testing centers, which shall be located at a site that represents high altitude conditions, to ascertain whether, when in actual use throughout their useful life (as determined under section 202(d)), each class or category of vehicle and engine to which regulations under section 202 apply conforms to the emission standards of such regulations. The Administrator shall, in cooperation with the States, conduct routine testing of a representative sample of classes or categories of vehicles and engines to which regulations under section 202 apply. In carrying out such tests, the Administrator shall assure that the testing procedures and methods are of sufficient accuracy and consistency to carry out the purposes of this section. For the purposes of this paragraph, the term 'high altitude conditions' refers to high altitude as defined in Environmental Protection Agency regulations in effect as of the enactment of this Act.".

(f)(1) Section 203(a)(3) of the Clean Air Act is amended to read as follows:

"(3)(A) for any person to remove or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title prior to its sale and delivery to the ultimate purchaser, or for any person knowingly to remove or render inoperative any such device or element of design after such sale and delivery to the ultimate purchaser, except as may be temporarily necessary in the course of routine proper maintenance; or

"(B) for any person to manufacture or sell, or offer to sell, any part or component intended for use with, or as part of, any motor vehicle or motor vehicle engine, where a principal use of such part or component is to bypass, defeat, or render inoperative any device or element of design installed on or in a motor vehicle or motor vehicle engine in compliance with regulations under this title, and where such part or component is being offered for sale for such use or put to such use within the specific knowledge of such person; or".

(2) Section 205 of the Clean Air Act is amended to read as follows:

"SEC. 205. (a) Any person who violates paragraph (1), (2), or (4) of section 203(a) or any manufacturer or dealer who violates paragraph (3)(A) of section 203(a) shall be subject to a civil penalty of not more than $10,000. Any other person who violates paragraph (3)(A) of section 203(a) or any person who violates paragraph (3)(B) of section 203(a) shall be subject to a civil penalty of not more than $2,500. Any such violation with respect to paragraph (1), (3), or (4) of section 203(a) shall constitute a separate offense with respect to each motor vehicle or motor vehicle engine.

"(b) A civil penalty for a violation of section 203 shall be assessed by the Administrator by an order made on the record after opportunity for a hearing. In connection with any proceeding under this section the presiding officer may issue subpoenas for the attendance and testimony of witnesses and the production of papers, books, and documents.

"(c) In determining the amount of a civil penalty, the Administrator shall take into account the gravity of the violation, the size of the violator's business, the violator's history of compliance, action taken to remedy the violation, and the effect of the penalty on the violator's ability to continue in business.

"(d) If any person fails to pay a civil penalty assessed under this section—

"(1) after the order making the assessment has become a final order and if such person does not file a petition for judicial review of the order in accordance with section 307, or

"(2) after a court in any action brought for judicial review has entered a final judgment in favor of the Administrator or the action has otherwise been terminated if such person has filed a petition for review under section 307,

the Attorney General shall recover the amount assessed (plus interest from the date of the expiration of sixty days from the date of the order, or from the date of such final judgment, as the case may be) in an action brought in any appropriate district court for the United States. In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.".

(3) Section 203(c) of the Clean Air Act is amended by striking "from section 203(a)(3)" the second time it appears.

(g)(1)(A) Section 207(a)(3) of the Clean Air Act is amended by striking the last sentence and inserting in lieu thereof the following: "The term 'designed for emission control' as used in the preceding sentence means a catalytic converter, thermal reactor, trap oxidizer, oxygen sensor, air pump, air flow sensor, electronic control unit and other elements of a fuel metering system, exhaust gas recirculation system, evaporative emission control system, and altitude compensation system, or any other component that is first installed on or in a vehicle in mass production after the date of enactment of the Clean Air Standards Attainment Act of 1987 and that is installed for the primary purpose of reducing vehicle emissions. Such term shall not include those vehicle components which were in general use prior to model year 1968.".

(B) The penultimate sentence of section 207(b)(2) of the Clean Air Act is amended by striking all after "catalytic converter, thermal reactor," and inserting in lieu thereof "trap oxidizer, oxygen sensor, air pump, air flow sensor, electronic control unit and other elements of a fuel metering system, exhaust gas recirculation system, evaporative emission control system, and altitude compensation system, or any other component that is first installed on or in a vehicle in mass production after the date of enactment of the Clean Air Standards Attainment Act of 1987 and that is installed for the primary purpose of reducing vehicle emissions.".

(2) Section 207(c) of the Clean Air Act is further amended by adding at the end thereof the following new paragraph:

"(7) The Administrator shall promulgate regulations requiring each State which is required to implement a vehicle inspection and maintenance program to adopt quality control audits to assure that such inspections detect and report to the Administrator any patterns of defects in any manufacturer's emission control systems. The Administrator shall annually report to the Congress, with respect to each manufacturer, any significant finding of repeated or common emission system defects and the actions taken to remedy such nonconformity through ordered or voluntary recalls or other actions authorized by this Act.".

(3)(A) Section 207(c)(3)(B) of the Clean Air Act is amended by striking all after "no commercial relationship" and inserting in lieu thereof a period.

(B) Section 203(a)(4)(C) of the Clean Air Act is amended by striking "except as provided in subsection (c)(3) of section 207,".

(C) Section 203(a) of the Clean Air Act is amended by adding at the end thereof the following: "Paragraph (4)(C) shall not apply to the provision of any communication regarding any part, component, or system, or service provided without charge under the terms of the purchase agreement.".

(4) Section 207(e) of the Clean Air Act is amended by inserting "(1)" after "(e)" and by adding the following new paragraph:

"(2)(A) Each manufacturer of a new motor vehicle shall affix, and each dealer shall maintain, on each motor vehicle manufactured during and after model year 1991, a label indicating the full cost of applying the warranty under subsections (a) and (b) to such new motor vehicle. The form and content of such label, and the manner in which such label shall be affixed, shall be prescribed by the Administrator by rule, except that each such label shall contain, in bold face type, the following statement: 'The vehicle manufacturer or dealer may offer to sell warranties extending beyond those required by sections 207 (a) and (b) of the Clean Air Act and covering the emission system or other components or parts of the vehicle. The purchaser of the vehicle does not have any obligation to purchase the extended warranty from the manufacturer or the dealer. The vehicle purchaser may elect to buy an extended warranty from any other vendor of such warranties.'.

"(B) The Administrator may permit a manufacturer to comply with the provisions of subparagraph (A) by permitting such manufacturer to disclose the information required under this paragraph on the label required under section 3 of the Automobile Information Disclosure Act (15 U.S.C. 1232).

"(C) A violation of subparagraph (A) shall be treated as a violation of section 3 of the Automobile Disclosure Act (15 U.S.C. 1232).

"(D) The Administrator shall utilize the authorities of section 208 of this Act to verify the costs disclosed by each manufacturer under subparagraph (A).".

(5) Section 207(g) of the Clean Air Act is amended to read as follows:

"(g) For the purposes of this section, the owner of any motor vehicle or motor vehicle engine warranted under this section is responsible in the proper maintenance of such vehicle or engine to replace and to maintain, at his expense and at any service establishment or facility of his choosing, such items as spark plugs, points, condensers, and any other part, item, or device related to emission control (but not designed for emission control under the last two sentences of subsection (a)(3)), unless such part, item, or device is covered by any warranty not required by this Act.".

REGULATION OF FUELS

SEC. 303. (a) Section 211 of the Clean Air Act is amended by adding the following new subsections:

"(h)(1) After July 1, 1991, the sale or introduction into commerce of diesel fuel for use in motor vehicles, which fuel has a sulfur content in excess of 0.05 per centum by weight, shall be prohibited.

"(2) The fuel required to be used in certification of heavy-duty diesel vehicles and engines manufactured during and after model year 1992 shall have a sulfur content that does not exceed 0.05 per centum by weight.

"(3)(A) Paragraph (1) of this subsection and any regulations promulgated by the Administrator thereunder shall not require a small refinery to reduce the sulfur content of diesel fuel to 0.05 per centum by weight prior to July 1, 1994.

"(B) For the purpose of this subsection, the term "small refinery" means a refinery—

"(i) the diesel fuel producing capacity of which was in operation or under construction at any time during the one-year period immediately preceeding October 1, 1988,

"(ii) which has a crude oil or bona fide feed stock capacity (as determined by the Administrator) of one hundred and seventy-five thousand barrels per day or less, and

"(iii) which is owned or controlled by a refiner with a total combined crude oil or bona fide feed stock capacity (as determined by the Administrator) of three hundred and fifty thousand barrels per day or less.

"(4) The Administrator shall report to the Congress not later than the date six months after the enactment of this subsection, on whether a sulfur content in diesel fuel of 0.05 per centum by weight is necessary to assure that heavy-duty diesel vehicles and engines can achieve the particulate emission standards specified in section 202(a)(3)(F) or in regulations under section 202 for model year 1992 and model year 1995, or is otherwise warranted for the protection of public health.

"(i) Not later than two years after the date of enactment of this subsection, the Administrator shall promulgate regulations under this subsection requiring that the Reid vapor pressure of gasoline sold, offered for sale, or introduced into commerce during warm weather months (as defined by the Administrator), shall not exceed nine pounds per square inch, or with respect to any region established under section 178, any lower level requested by the regional commission for such region established under section 178(b). After April 1, 1991, no manufacturer or importer of gasoline may sell, offer for sale, or introduce into commerce any fuel which does not comply with such regulations. For ethanol/gasoline blends containing 10 per centum denatured anhydrous ethanol, the Reid vapor pressure limitations promulgated pursuant to this subsection shall be 1.0 pound per square inch greater than the applicable Reid vapor pressure limitations which apply to gasoline: *Provided, however,* That a refiner, distributor, blender, marketer, reseller, carrier, retailer, or wholesale purchaser-consumer shall be deemed to be in full compliance with the provisions of this subsection and the regulations promulgated thereunder if it can demonstrate (by showing receipt of a certification or other evidence acceptable to the Administrator) that (I) the gasoline portion of the blend complies with the Reid vapor pressure limitations promulgated pursuant to this subsection, and (II) the ethanol portion of the blend does not exceed its waiver condition under subsection (f)(4).

"(j)(1) After October 1, 1990, the sale or introduction into commerce of gasoline for use in motor vehicles, in any area that is a nonattainment area as defined in section 171(2) for carbon monoxide, during the period from October 1 to

April 1 of each year, which fuel has an oxygen content less than 2 per centum oxygen by weight, shall be prohibited.

"(2) After October 1, 1991, the sale or introduction into commerce of gasoline for use in motor vehicles, in any area that is a nonattainment area as defined in section 171(2) for carbon monoxide during the period from October 1 to April 1 of each year, which fuel has an oxygen content less than 3.7 per centum oxygen by weight, shall be prohibited.

"(3) The Administrator may waive the requirements of paragraph (1) or (2) in whole or in part with respect to the level of oxygen content, the timing of available oxygenated gasoline, or the use of oxygenated fuels, in a specific area, where full implementation of such provision may reasonably be anticipated to result in an unacceptable increase in levels of other air pollutants.

"(4) Not later than two years after the enactment of this subsection, the Administrator shall submit a report to the Environment and Public Works Committee of the United States Senate and the Energy and Commerce Committee of the House of Representatives concerning the increased use of oxygenated fuels nationwide; and the use of oxygenated fuels with an oxygen content by weight greater than 3.7 per centum. Such report shall include an analysis of emissions, drivability, fuel volatility and availability of gasoline with increased oxygen levels.".

(b)(1) Section 211(d) of the Clean Air Act is amended to read as follows:

"(d)(1) Any person who violates subsection (a), (f), (h), or (j) or the regulations prescribed under subsection (c), (h), or (i) or who fails to furnish any information required by the Administrator under subsection (b) shall be subject to a civil penalty of not more than $10,000 for each and every day of such violation. Such civil penalty shall be assessed by the Administrator by an order made on the record after opportunity for a hearing. In connection with any proceeding under this section the presiding officer may issue subpoenas for the attendance and testimony of witnesses and the production of papers, books, and documents.

"(2) In determining the amount of a civil penalty, the Administration shall take into account the gravity of the violation, the size of the violator's business, the violator's history of compliance, action taken to remedy the violation, and the effect of the penalty on the violator's ability to continue in business.

"(3) If a person fails to pay a civil penalty assessed under this subsection—

"(A) after the order making the assessment has become a final order and if such person does not file a petition for judicial review of the order in accordance with section 307, or

"(B) after a court in any action brought for judicial review has entered a final judgment in favor of the Administrator or the action has otherwise been terminated if such person has filed a petition for review under section 307,

the Attorney General shall recover the amount assessed (plus interest from the date of the expiration of sixty days from the date of the order, or from the date of such final judgment, as the case may be) in an action brought in any appropriate district court for the United States. In such an action, the validity, amount, and appropriateness of such penalty shall not be subject to review.".

(2) Section 211(c) of the Clean Air Act is amended by adding a new paragraph as follows:

"(5) Regulations under this subsection shall prohibit any person from introducing, or causing or allowing the introduction, of a regulated fuel or fuel additive into a motor vehicle not designed for such fuel or fuel additive.".

(b)(1) Effective January 1, 1993 each State shall implement a vehicle emission control inspection and maintenance program.

(2) The term "vehicle emission control inspection and maintenance program" as used in section 172(d) means a program to reduce in-use emissions of hydrocarbons, carbon

monoxide, oxides of nitrogen, and diesel particulates from motor vehicles that—

(A) covers all vehicles regularly operating in the program area;

(B) includes at a minimum (i) each Metropolitan Statistical Area (as defined by the Director of the Bureau of the Census) with a population of one hundred thousand or more according to the 1985 Census, containing a nonattainment area, and (ii) each area identified under section 178(c)(1);

(C) requires annual emission testing and necessary adjustment, repair, or maintenance;

(D) requires direct inspection of components of vehicle emission control systems (including evidence of misfueling) and, where such components have been rendered inoperative, the repair or replacement of such components;

(E) requires inspection of heavy-duty vehicle exhaust or compliance with existing standards for the opacity of such exhaust;

(F) is operated on a centralized or, with respect to emission testing, computerized basis; and

(G) has a repair cost waiver in the case of failure of at least $200, or provides that any repair cost waiver limit shall apply only to costs that are not covered by a warranty under section 207.".

PART D—METHANE

SEC. 123. SHORT TITLE.

This part may be cited as the "Methane Emissions Elimination Act".

SEC. 124. METHANE SOURCE IDENTIFICATION AND ASSESSMENT.

(a) Not later than January 1, 1992, the Administrator of the Environmental Protection Agency, in consultation with the Administrators of the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration, shall submit to the Congress a report on the following:

(1) the contribution of methane to global climate change;

(2) the sources and sinks of methane;

(3) the methods of controlling emissions of methane; and,

(4) the relationship between emissions of methane and concentrations of other trace gases, including the hydroxyl radical.

(b) The Solid Waste Disposal Act is amended by—

(1) inserting in section 4001 immediately before "are environmentally" the following: "minimize emis-

sions and other releases to the environment and which are otherwise".

(2) in section 4002(c)(1) striking the words "reasonable protection of ambient air quality" and substituting "and the minimization of emissions and other releases to the environment of pollutants including, but not limited to, methane or other harmful gases or materials."

(3) in section 4003(a) adding a new subsection (7) as follows:

"(7) The plan shall provide for methods (including prohibitions on the nature of materials which are disposed), practices, or technologies which minimize emissions of methane and other gases, both during operation and after closure."

(4) in section 4007(a) inserting immediately before the period at the end of the second sentence the following:

", provided that the Administrator determines that such plan satisfies the requirements of paragraph (7) of section 4003. Plans which fail to satisfy such requirements shall be disapproved".

(c) Not later than January 1, 1992, the Administrator shall promulgate regulations implementing the requirements of this section and requiring State plans developed under subtitle D of the Solid Waste Disposal Act to be amended and either approved or disapproved by July 1, 1993. Any plan not affirmatively approved by such date shall be deemed disapproved for purposes of the Solid Waste Disposal Act. Amended plans shall require all facilities constructed after January 1, 1994 subject to subtitle D to be designed, constructed and operated so as to minimize emissions of methane and shall require all existing facilities to be modified prior to January 1, 1994 and thereafter operated so as to minimize emissions of methane and other pollutants.

(c) Effective January 1, 1995 mass releases of methane, whether through intentional venting of wells or otherwise, and flaring of methane are prohibited.

PART E—MISCELLANEOUS PROVISIONS

SEC. 125. FEDERAL ENFORCEMENT.

(a) COMPLIANCE ORDERS.—(1) Whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of this title, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both, or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

(2) Any order issued pursuant to this subsection may include a suspension or revocation of any permit issued by the Administrator and shall state with reasonable specificity the nature of the violation. Any penalty assessed in the order shall not exceed $25,000 per day of noncompliance for each violation of a requirement of this Act. In assessing such a penalty, the Administrator shall take into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(b) PUBLIC HEARING.—Any order issued under this section shall become final unless, no later than thirty days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

(c) VIOLATION OF COMPLIANCE ORDERS.—If a violator fails to take corrective action within the time specified in a compliance order, the Administrator may assess a civil penalty of not more than $25,000 for each day of continued noncompliance with the order and the Administrator may suspend or revoke any permit issued to the violator.

(d) CRIMINAL PENALTIES.—Any person who—

(1) knowingly exceeds the production limits under section 107 (production phase-out for initial list) or section 109 (limitation on ozone depletion potential);

(2) knowingly introduces into interstate commerce a substance that was produced in violation of section 107 or section 109;

(3) knowingly imports a substance listed under section 105, a product containing such substance, or a product manufactured with a process that uses such substance, in violation of section 111 (certification of equivalent programs);

(4) knowingly introduces into interstate commerce a substance or product in violation of section 108 (limitation on use) or section 112 (labeling);

(5) knowingly omits material information or makes any false material statement or representation in any application, record, report, permit, or other document filed, maintained, or used for purposes of compliance with this title; or

(6) knowingly produces, transports, distributes, or uses any substance listed under section 105, a product containing such substance, or a product manufactured with a process that uses such substance, and who knowingly destroys, alters, conceals, or fails to file any record, application, report, or other document required

to be maintained or filed for purposes of compliance with this title

shall, upon conviction, be subject to a fine in accordance with title 18 of the United States Code for each day of violation, or imprisonment not to exceed two years, or both. If conviction is for a violation committed after a first conviction of such person under this paragraph, the maximum punishment under the respective paragraph shall be doubled with respect to both fine and imprisonment.

(e) CIVIL PENALTY.—Any person who violates any requirement of this title shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation.

(f) VIOLATIONS.—Each day of violation of any requirement of this title shall, for purposes of this section, constitute a separate violation. In addition, for purposes of section 107 (production phase-out for initial list), section 108 (limitation on use), section 109 (limitation on ozone depletion potential), and paragraphs (1), (2), (3), and (4) of subsection (d) of this section, the production, introduction into commerce, or importation of each one hundred pounds of a substance listed under section 105 that is in excess of the production limits under section 107 or section 109 shall constitute a separate violation.

SEC. 126. JUDICIAL REVIEW OF FINAL REGULATIONS AND CERTAIN PETITIONS.

Any judicial review of any fiscal action of the Administrator pursuant to this title shall be in accordance with sections 701 through 706 of title 5 of the United States Code, except that—

(1) a petition for review of any final action of the Administrator may be filed by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts business, and such petition shall be filed within ninety days from the date of such promulgation or denial or after such date if such petition is for review based solely on grounds arising after such ninetieth day; action of the Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement; and

(2) if a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to

be adduced upon the hearing in such manner and upon such terms and conditions as the court may deem proper; the Administrator may modify administrative findings as to the facts, or make new findings, by reason of the additional evidence so taken, and shall file with the court such modified or new findings and the Administrator's recommendation, if any, for the modification or setting aside of the original administrative order, with the return of such additional evidence.

SEC. 127. CITIZEN SUITS.

(a) In General.—Except as provided in subsection (b) or (c) of this section, any person may commence a civil action on his own behalf—

(1) against any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this title; or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this title which is not discretionary with the Administrator.

Any action under paragraph (a)(1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred. Any action brought under paragraph (a)(2) of this subsection may be brought in the district court for the district in which the alleged violation occurred or the District Court of the District of Columbia. The district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce the permit, regulation, condition, requirement, prohibition, or order, referred to in paragraph (1), to order such person to take such other action as may be necessary, or both, or to order the Administrator to perform the act or duty referred to in paragraph (2), as the case may be, and to apply any appropriate civil penalties.

(b) ACTIONS PROHIBITED.—No action may be commenced under subsection (a)(1) of this section—

(1) prior to sixty days after the plaintiff has given notice of the violation to—

(A) the Administrator; and

(B) to any alleged violator of such permit, regulation, condition, requirement, prohibition, or order; or

(2) if the Administrator has commenced and is diligently prosecuting a civil or criminal action in a court of the United States to require compliance with

such permit, regulation, condition, requirement, prohibition, or order.

In any action under subsection (a)(1), any person may intervene as a matter of right. Any action respecting a violation under this Act may be brought under this section only in the judicial district in which such alleged violation occurs.

(c) NOTICE.—No action may be commenced under paragraph (a)(2) of this section prior to sixty days after the plaintiff has given notice to the Administrator that he will commence such action. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(d) INTERVENTION.—In any action under this section the Administrator, if not a party, may intervene as a matter of right.

(e) COSTS.—The court, in issuing any final order in any action brought pursuant to this section or section 125, may award costs of litigation (including reasonable attorney and expert witness fees) to the prevailing or substantially prevailing party, whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(f) **Other Rights Preserved.**—Nothing in this section, or this title, shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or requirement or to seek any other relief (including relief against the Administrator).

SEC. 128. SEPARABILITY.

If any provision of this title, or the application of any provision of this title to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this title, shall not be affected thereby.

SEC. 129. RELATIONSHIP TO OTHER LAWS.

(a) Nothing in this title shall be construed to diminish the authority of the Administrator under the Clean Air Act, the Resource Conservation and Recovery Act, or the Toxic Substances Control Act, or any other law, or to affect the authority of any other department, agency, or instrumentality of the United States under any provision of law to promulgate or enforce any requirement respecting the control of any substance, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere, or the global environment.

(b) Nothing in this Act shall preclude or deny any State or political subdivision thereof from adopting or enforcing any requirement respecting the control of any substances, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere or the global environment.

SEC. 130. AUTHORITY OF ADMINISTRATOR.

The Administrator is authorized to prescribe such regulations as are necessary to carry out this Act.

TITLE II—GLOBAL CHANGE ADJUSTMENT AND MITIGATION

SEC. 201. SHORT TITLE.

This title may be cited as the "Environmental Adjustment Act of 1989".

SEC. 202. FINDINGS.

The Congress finds that—

(a) there has been an observed increase in global average temperatures of 0.7 degrees Centigrade in the last century;

(b) regardless of any action taken by humanity, there will be further global average temperature increases of up to one degree Centigrade;

(c) such temperature increases will manifest themselves in widespread alterations of the current environment;

(d) such changes may include, but will almost certainly not be limited to, the following:

(1) a rise in the level of oceans, bays, sounds, and other bodies of water, with ensuing destruction of natural and manmade structures;

(2) shifts in patterns of rainfall and soil moisture, resulting in marked changes in agricultural productivity;

(3) changes in the distribution and seasonal availability of fresh water resources, including the exhaustion of surface and ground water supplies;

(4) increased political instability, with the potential for international conflict; and,

(5) accelerated extinction of plant and animal species, including many now classified as endangered;

(e) the adverse effects of some such changes can be mitigated through proper long range planning, analysis and, most importantly, action; and

(f) substantial resources can be saved through the adoption of a program to systematically identify the impacts of proposed actions on global environmental change and the effects of such changes on the natural environment and engineered structures and systems.

SEC. 203. AMENDMENT TO THE NATIONAL ENVIRONMENTAL POLICY ACT.

The National Environmental Policy Act of 1969 is amended by adding at the end thereof a new title as follows:

"TITLE III—GLOBAL PROTECTION

"Subtitle A—Atmospheric Protection

"SEC. 301. SHORT TITLE.

"This subtitle may be cited as the "Atmosphere Protection Act of 1989".

"SEC. 302. FINDINGS.

"The Congress, recognizing the profound and irreversible and potentially catastrophic impacts of humanity's activities on the global atmosphere and the world's environment, and the inability of science to predict with certainty the consequences for humanity of any such changes, hereby declares that each person has a responsibility and obligation to avoid contamination of the atmosphere.

"SEC. 303. AUTHORIZATION.

"The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this chapter, and (2) all agencies of the Federal Government shall, with respect to pollutants, substances, products, or practices which may contribute to global climate change, stratospheric ozone depletion, or trace gas modification of the atmosphere—

"(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

"(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will assure that environmental contamination is minimized;

"(C) include in every recommendation on report or proposals for legislation and other major actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

"(i) the environmental impact of the proposed action,

"(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

"(iii) alternatives to the proposed action,

"(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and "(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Such pollutants and substances shall include, at a minimum, the following: carbon dioxide, oxides of nitrogen, chlorofluorocarbons, halons, methyl chloroform, carbon tetrachloride and methane. Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, and shall accompany the proposal through the existing agency review processes;

"(D) study, develop, describe and select appropriate alternatives which recognize and minimize the environmental impacts of such proposed action.

"(E) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

"(F) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

"(G) assist the Council on Environmental Quality established by subchapter II of this chapter.".

SEC. 204. INVENTORY AND REVIEW OF FEDERAL FACILITIES, HOLDINGS AND ACTIVITIES.

(a)(1) Not later than January 1, 1991, the President shall direct each agency and instrumentality of the executive branch to undertake a systematic and comprehensive survey of all Federal lands and structures to ascertain their vulnerability to changes associated with changes in the global environment. To the maximum extent practicable, such survey shall include the lands and structures of State and local government and Indian tribes as well. Such survey shall include, but not be limited to, the following:

(A) public highways, bridges, tunnels, and other transportation structures;

(B) ports, waterways, locks and dams;

(C) public buildings and monuments;

(D) publicly owned treatment works;

(E) national parks, forests, wilderness areas, wildlife refuges, marine sanctuaries, and all other comparable facilities; and,

(F) national defense facilities, including but not limited to military bases and reservations, whether located in the United States or elsewhere.

(2) Not later than January 1, 1993, the President shall submit a report to the Congress containing the results of the survey required by this section and recommending both generic and site-specific actions and policies to—

(A) preclude further public or private investment in areas susceptible to loss or damage due to global environmental change;

(B) minimize and mitigate the loss or damage due to the global environmental change which is likely to occur.

SEC. 205. GROUND WATER PROTECTION AND RECHARGE.

(a) FINDINGS.—The Congress finds that—

(1) a consequence of global climate change may be the exhaustion of ground water resources essential to the maintenance of agricultural productivity, the loss of which could jeopardize the national economy and security;

(2) existing knowledge and technology of artificial recharge of ground water is inadequate to meet exist-

ing and anticipated future water resource problems and to take advantage of possible water resource opportunities;

(3) a program to support and assure the study and development of artificial ground water recharge techniques is essential.

(b) The Secretary of the Army (hereinafter in this section referred to as the "Secretary") acting through the Chief of Engineers, is authorized to undertake a program of research, development, and demonstration of artificial ground water recharge techniques. The purpose of such program shall be to—

(A) demonstrate the usefulness of artificial ground water recharge as a method for improving ground water quantity and for preventing degradation of, or improving ground water quality;

(B) determine the economic viability of artificial ground water recharge as a method of augmenting existing water supplies and improving ground water quality on a local or regional basis; and

(C) develop new and more efficient techniques for the transfer of surface water to existing or potential water bearing underground strata.

(3) In order to advance the purpose of this subsection, the Secretary shall, at different locations throughout the

United States, design, construct, and operate and maintain projects to demonstrate different artificial ground water recharge techniques. To the maximum extent feasible, such locations shall be chosen to reflect a variety of geological, physical, and chemical conditions affecting ground water quality and quantity. In selecting such locations, and carrying out such work, the Secretary shall consult and coordinate with appropriate State and local governmental agencies.

(c) COORDINATION.—In order to prevent any unnecessary duplication of effort, and in order to fully utilize the available expertise of other agencies and departments of the United States, the Secretary, in carrying out subsection (b) of this section, shall consult and coordinate with the United States Geological Survey, the Environmental Protection Agency, the Bureau of Reclamation, and other appropriate agencies and departments of the United States.

(d) UTILIZATION OF CURRENT RESOURCES.—To the extent possible, activities undertaken pursuant to subsection (b) of this section shall utilize existing or authorized Corps of Engineers water resources projects, programs, facilities, and personnel.

(e) REPORT.—Not later than May 30, 1994, the Secretary shall transmit to the Committee on Public Works and Transportation of the House of Representatives and the Committee on Environment and Public Works in the Senate, a final report describing the results of activities undertaken pursuant to this section. Not later than 30 months after the date of enactment of this Act, the Secretary shall transmit to such Committees of Congress a brief report describing the progress of such activities.

(f) DEFINITIONS.—For the purposes of this section, the term—

(1) "artificial ground water recharge" shall include but not be limited to techniques to supplement or otherwise affect ground water supplies such as wells, pits, ponds, spreading basins, or gravel chains; and

(2) "non-Federal sponsor" shall mean a State, city, county, or any other entity which derives its powers from a State constitution, or was created pursuant to an Act of a State legislature.

(g) SHORT TITLE.—This section shall be known as the "Ground Water Recharge Research and Demonstration Act".

TITLE III—INTERNATIONAL COOPERATION

SEC. 301. FINDINGS.

The Congress finds that—

(a) complete elimination of chlorofluorocarbons and related chemicals which are destroying the Earth's protective ozone layer and adding to global temperature increases requires concerted international agreement and action;

(b) the most effective controls on emissions of carbon dioxide, hydrocarbons, oxides of nitrogen, methane and other trace gases which are increasing global temperatures will require concerted international agreement and action;

(c) international agreements to address some aspects of these global threats are already underway and include—

(1) an international protocol to reduce production and use of chlorofluorocarbons;

(2) an international agreement to reduce emissions and transboundary transport of oxides of sulfur;

(3) an international agreement to reduce emissions and transboundary transport of oxides of nitrogen.

(d) in the absence of such international cooperation and agreement, the interests of the United States will be directly and substantially threatened due to—

(1) damage to the domestic environment;

(2) damage to the national economy;

(3) increased international tension; and

(4) increased danger of international armed conflict.

SEC. 302. INTERNATIONAL COOPERATION.

(a) the President is hereby directed to request that the United Nations promptly establish a temporary new agency to be headed by the director of the United Nations Environmental Program, to—

(1) coordinate international efforts to minimize and mitigate the effects of unavoidable environmental alterations; and,

(2) provide financial, technical and other assistance to developing nations to facilitate improvements in their domestic standards of living while minimizing or eliminating contributions to global, continental and subcontinental scale environmental damages.

(b) The President is hereby directed to request that the United Nations establish a temporary program of forestation to—

(1) assist and encourage nations in halting activities which are resulting in destruction of the world's forests; and

(2) undertake a global program of reforestation.

(c) The President is hereby directed to instruct United States representatives to bilateral and multilateral organizations other than the United Nations to review the activities of such organizations to assure that their actions and programs are consistent with the goals and objectives of this Act and, where necessary, to persuade such organizations to adopt programs to implement the goals and objectives of this Act.

TITLE IV—DEVELOPMENT OF NON-POLLUTING ENERGY SOURCES

SEC. 401. NATIONAL COMMISSION ON INHERENTLY SAFE NUCLEAR ENERGY.

(a) There is established a commission to be known as the National Commission on Inherently Safe Nuclear Energy (hereinafter in this section referred to as the "Commission").

(b) The duties of the Commission are to—

(1) assess generally the safety and reliability of the current generation of nuclear power plants in the United States;

(2) review the nuclear industries of other nations which rely heavily on nuclear power for the generation of their electricity and report on the comparative safety and reliability of the programs of those nations, which shall included but not be limited to France, West Germany, Canada, Japan, Sweden, and Finlard;

(3) review each incident in the United States related to the operation of a nuclear power plant in which there has been personal injury, or a significant threat thereof, and report on the causes of conse-

quences of such incident, including ways in which it could have been avoided;

(4) review and assess the nature and magnitude of public opposition and concern with the safety of nuclear power and the reasons for such concern and opposition;

(5) evaluate options for responding to the concerns and fears of the public in a fashion which allays fears by responding substantively;

(6) evaluate the suitability of the current structure of the domestic utility industry with respect to the safe and efficient operation of nuclear units, and alternatives to such current structure;

(7) identify and evaluate each inherently safe passive control technology which might reasonably become available by the year 2010 and examine explicitly whether each such technology has the potential to minimize or eliminate the risks, whether real or perceived, associated with nuclear power by the American public;

(8) review the difference in operating records of each utility operating nuclear generating plants and make specific recommendations for changes in technologies, policies, practices, and organizational structure of the industry designed to assure that the best of

those safety records become the standard for the United States industry; and

(9) conclude and state specifically whether it is possible to develop in the United States a nuclear industry capable of supplying not less than 50 per centum of the Nation's electricity needs through the year 2100 in a way which enjoys the trust, confidence and support of the public.

(c)(1) The Commission shall be composed of nineteen members as follows:

(A) six appointed by the Speaker of the United States House of Representatives from among the Members of the House of Representatives;

(B) four appointed by the majority leader of the United States Senate from among the Members of the United States Senate;

(C) eight appointed by the President as follows:

(i) four from among a list of nominations submitted to the President by the National Governors Association;

(ii) one from among a list of nominations submitted to the President by the National League of Cities and the United States Conference of Mayors;

(iii) three from among a list of nominations submitted to the President from groups, organizations, or associations of citizens which are representative of persons concerned with pollution and environmental issues and which have participated, at the State or Federal level, in studies, administration proceedings, or litigation (or any combination thereof) relating to nuclear energy; and

(D) the Chairman of the Nuclear Regulatory Commission.

A vacancy in the Commission shall be filled in the manner in which the original appointment was made. Appointments may be made under this subsection without regard to section 5311(b) of title 5, United States Code. Not more than four of the six members appointed under subparagraph (A) and not more than three of the four members appointed under subparagraph (B) may be of the same political party. No member appointed under paragraph (C) may be an officer or employee of the Federal Government.

(2) If any member of the Commission who was appointed to the Commission as a Member of the Congress leaves that office, or if any member of the Commission who was appointed from persons who are not officers or employees of any government becomes an officer or employee of a government, he may continue as a member of the Commission for

not longer than the ninety-day period beginning on the date he leaves that office or becomes such an officer or employee, as the case may be.

(3) Members shall be appointed for the life of the Commission.

(4)(A) Except as provided in subparagraph (B), members of the Commission shall each be entitled (subject to appropriations provided in advance) to receive the daily equivalent of the maximum annual rate of basic pay in effect for grade GS-18 of the General Schedule for each day (including travel time) during which they are engaged in the actual performance of duties vested in the Commission. While away from their homes or regular places of business in the performance of services for the Commission, members of the Commission shall be allowed travel expenses, including per diem in lieu of subsistence, in the same manner as persons employed intermittently in Government service are allowed expenses under section 5703 of title 5 of the United States Code.

(B) Members of the Commission who are Members of the Congress shall receive no additional pay, allowances, or benefits by reason of their service on the Commission.

(5) Five members of the Commission shall constitute a quorum but two may hold hearings.

(6) The Chairman of the Commission shall be appointed by the Speaker of the House of Representatives from among members appointed under paragraph (1)(A) of this subsection and the Vice Chairman of the Commission shall be appointed by the majority leader of the Senate from among members appointed under paragraph (1)(B) of this subsection. The Chairman and the Vice Chairman of the Commission shall serve for the life of the Commission unless they cease to be members of the Commission before the termination of the Commission.

(7) The Commission shall meet at the call of the Chairman or a majority of its members.

(d)(1) The Commission shall have a Director who shall be appointed by the Chairman, without regard to section 5311(b) of title 5, United States Code.

(2) The Chairman may appoint and fix the pay of such additional personnel as the Chairman considers appropriate.

(3) With the approval of the Commission, the Chairman may procure temporary and intermittent services under section 3109(b) of title 5 of the United States Code.

(4) The Commission shall request, and the head of any Executive-Branch Agency is authorized to detail on a reimbursable nonreimbursable basis, any of the personnel of their respective agencies to the Commission to assist it in carrying out its duties under this section.

(e)(1) The Commission may, for the purpose of carrying out this section, hold such hearings, sit and act at such times and places, take such testimony, and receive such evidence, as the Commission considers appropriate.

(2) Any member or agent of the Commission may, if so authorized by the Commission, take any action which the Commission is authorized to take by this section.

(3) The Commission may use the United States mails in the same manner and under the same conditions as other departments and agencies of the United States.

(4) The Administrator of General Services shall provide to the Commission on a reimbursable basis such administrative support services as the Commission may request.

(5) The Commission may secure directly from any department or agency of the United States information necessary to enable it to carry out this section. Upon request of the Chairman of the Commission, the head of such department or agency shall furnish such information to the Commission.

(f)(1) The Commission shall transmit to the President and each House of the Congress a report not later than October 30, 1995. The report shall contain a detailed statement of the findings and conclusions of the Commission with respect to each item listed in subsection (b), together with its recommendations for such legislation; and administrative actions, as it considers appropriate.

(g) The Commission shall cease to exist on January 1, 1996.

(h) There is authorized to be appropriated for the fiscal year 1990 through 1996 not to exceed $50,000,000 to carry out this section.

SEC. 402. NATIONAL GOAL.

It is hereby established as a national goal of the United States to derive 50 per centum of the national supply of energy from nonpolluting technologies and practices by the year 2000 and 100 per centum by the year 2050.

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II

101st CONGRESS
1st Session

S. 491

To reduce atmospheric pollution to protect the stratosphere from ozone depletion, and for other purposes.

IN THE SENATE OF THE UNITED STATES

March 2 (legislative day, January 3), 1989

Mr. Chafee (for himself and Mr. Baucus) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To reduce atmospheric pollution to protect the stratosphere from ozone depletion, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Stratospheric Ozone and Climate Protection Act of 1989".

SEC. 2. FINDINGS.

The Congress finds that—

(1) the best available scientific evidence shows that manufactured substances, including chlorofluorocarbons and other substances covered by this Act, are

destroying stratospheric ozone, and significantly contributing to global climate change, and other atmospheric modifications;

(2) no level of stratospheric ozone depletion or global climate change caused by human activities can be deemed safe;

(3) stratospheric ozone depletion will lead to increased incidence of solar ultraviolet radiation in the troposphere and at the surface of the Earth;

(4) increased incidence of solar ultraviolet radiation will cause increased rates of disease in humans (including increased rates of skin cancer, cataracts, and, potentially, suppression of the immune system), threaten food crops and marine resources, and otherwise damage the natural environment;

(5) the Montreal Protocol on Substances that Deplete the Ozone Layer provides a framework for all nations of the world to protect the earth's ozone shield;

(6) the Ozone Trends Report completed in March 1988 through the effort of over one hundred international scientists found undisputed observational evidence that the atmospheric concentrations of source gases important in controlling stratospheric ozone levels (chlorofluorocarbons, halons, methane, nitrous oxide, and carbon dioxide) are increasing on a global

scale as a result of human activities and that observed losses of ozone since 1970 are significantly greater than computer models had predicted, especially over the northern hemisphere during the winter months where losses ranging from 2.3 per centum to 6.2 per centum were observed;

(7) the computer models used in the formulation of the Montreal Protocol predicted that global ozone depletion would reach 0.8 per centum by 1986, the Ozone Trends Report measured global ozone depletion of 2.5 per centum.

(8) there has been a large, sudden, and unexpected decrease in springtime Antarctic ozone with decreases greater than 50 per centum in the total column, and greater than 95 per centum between an altitude of fifteen to twenty kilometers;

(9) scientific expeditions and analyses have established that chlorine compounds derived from emissions of chlorofluorocarbons are responsible for destruction of the stratospheric ozone layer over the Antarctic and the surrounding oceans;

(10) recent scientific reports indicate that a similar destruction of the ozone layer may occur over the Arctic region and that the same chlorine compounds

found in the Antarctic region are present in areas of the Arctic ozone layer;

(11) experimental laboratory studies and measurements of ozone depletion suggest that the chemical reactions responsible for destruction of ozone over Antarctica could operate in the aerosal layer of the stratosphere and would not be limited to the polar regions;

(12) the Ozone Trends Report found that, since 1979, ozone appears to have decreased by 5 per centum or more at all latitudes south of 60 degrees south throughout the entire year;

(13) the control measures that are set forth in the Montreal Protocol (a freeze on the consumption of certain chlorofluorocarbons at 1986 levels in 1989 followed by a 20 per centum reduction in 1993 and an additional 30 per centum reduction in 1998, coupled with a freeze on the consumption of certain halons at 1986 levels in 1992) will allow atmospheric concentrations of chlorine to increase by more than a factor of two;

(14) the Ozone Trends Report and other recent scientific studies have raised serious questions about the adequacy of the control measures that are set forth in the Montreal Protocol;

(15) ozone depletion chlorofluorocarbons are powerful greenhouse gases projected to be responsible for 15–25 per centum of global warming and, under the existing Montreal Protocol, 10 per centum of future warming;

(16) stratospheric ozone depletion and global climate change from continued emissions of chlorofluorocarbons and other halogenated chlorocarbons with ozone depleting potential, and emissions of other gases, imperil human health and the environment worldwide;

(17) in order to stabilize and eventually reduce concentrations of chlorine and bromine in the stratosphere, to conserve the stratospheric ozone layer (an exhaustible natural resource), and to reduce the extent of global climate change—

(A) emissions of chlorofluorocarbons and other substances covered by this Act, including halogenated carbons with ozone depleting potential, should be terminated rapidly,

(B) it is necessary to control international trade in substances covered by this Act and products containing or made with processes that use such substances; and

(C) trade with countries that are not parties to the Montreal Protocol should be controlled;

(18) the highest priority must be given to developing and deploying safe and energy efficient substitutes to replace ozone depleting substances as rapidly as possible; and

(19) the United States needs to develop and deploy safe, energy efficient substitutes to replace ozone depleting substances in order to demonstrate to the world its commitment to protect the stratosphere and to limit climate change.

SEC. 3. OBJECTIVES AND NATIONAL GOAL.

(a) The objectives of this Act are to restore and maintain the chemical and physical integrity of the Earth's atmosphere and to protect human health and the global environment from all known and potential dangers due to atmospheric or climatic modification, including stratospheric ozone depletion, that is or may be related to the chlorofluorocarbons or other substances covered by this Act by—

(1) reducing significantly the production and emission into the atmosphere of pollutants caused by human activities,

(2) promoting the rapid development and deployment of energy efficient alternatives to the use of chlorofluorocarbons and other substances covered by this Act,

(3) assuring that such alternatives reduce ozone depleting potential to the maximum extent possible and, at the same time, do not exacerbate the problem of human-induced global climate change either directly as radiatively important trace gases or indirectly as substances that reduce the energy efficiency of products which incorporate or use such substances, and

(4) promoting additional scientific research on atmospheric or climatic modification, including stratospheric ozone depletion, and on the known and potential adverse effects therefrom on human health and the global environment.

(b) In order to achieve the objectives of this Act, it is the national goal to eliminate atmospheric emissions of manufactured substances with ozone-depleting potential as well as direct and indirect global warming potential, including chlorofluorocarbons and other halogenated carbons with ozone depleting and global warming potential, and to reduce to the maximum extent possible emissions of other gases caused by human activities that are likely to affect adversely the global climate.

SEC. 4. DEFINITIONS.

As used in this Act:

(1) The term "Administrator" means the Administrator of the Environmental Protection Agency.

(2) The term "household appliances" means non-commercial personal effects, including air-conditioners, refrigerators, and motor vehicles.

(3) The term "import" means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States.

(4) The term "manufactured substances" means any organic or inorganic chemical substances of a particular molecular identity, or any mixture, that has been manufactured for commercial purposes.

(5) The term "medical purposes" means medical devices and diagnostic products (A) for which no safe substitute has been developed and (B) which, after notice and opportunity for public comment, has been approved and determined to be essential by the Commissioner of the Food and Drug Administration, in consultation with the Administrator.

(6) The term "person" means an individual, corporation (including a government corporation), partnership, firm, joint stock company, trust, association, or any other entity, or any officer, employee, agent, de-

partment, or instrumentality of the Federal Government, of any State or political subdivision thereof (including any interstate body), or of any foreign government (including any international instrumentality).

(7) The term "substances covered by this Act" means those substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion, and are listed under subsection (a) or (b) of section 5.

SEC. 5. LISTING OF REGULATED SUBSTANCES.

(a) Priority List and Initial Lists of Substances to be Phased Out.—Within sixty days after enactment of this Act, the Administrator shall publish a priority list of manufactured substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion. The initial list shall include chlorofluorocarbon-11, chlorofluorocarbon-12, chlorofluorocarbon-113, chlorofluorocarbon-114, chlorofluorocarbon-115, methyl chloroform, halon-1211, halon-1301, and halon-2402.

(b) Other Regulated Substances.—Simultaneously with publication of the priority list, the Administrator shall create a list of other manufactured substances which, in the judgment of the Administrator, meet the criteria set forth in the first sentence of subsection (a). The list of other substances shall be subject to the limitations of ozone depletion potential under section 10 of this Act and shall include chlorofluorocarbon-22, chlorofluorocarbon-123, chlorofluorocarbon-124, chlorofluorocarbon-125, chlorofluorocarbon-141(b), chlorofluorocarbon-142(b), carbon tetrachloride, and methylene chloride. At least annually thereafter, the Administrator shall publish a proposal to add to such list each other manufactured substance which, in the judgment of the Administrator, meets the criteria set forth in the first sentence of subsection (a). Within one hundred and eighty days of any such proposal, after allowing an opportunity for public comment, the Administrator shall promulgate a regulation adding each such substance to the list, unless the Administrator determines that such substance clearly does not meet the criteria set forth in the first sentence of subsection (a).

(c) OZONE DEPLETION FACTOR.—Simultaneously with publication of the lists or additions thereto under this section, and at least annually thereafter, the Administrator shall assign to each listed substance a numerical value representing the ozone depletion potential of such substance, on a mass (per kilogram) basis, as compared with chlorofluorocarbon-11. The numerical value shall, for the purposes of section 10, constitute the ozone-depletion factor of each such substance. Unless the Administrator promulgates regulations under this subsection setting forth a different value, the following ozone depletion factors shall apply for each listed substance:

Substance	Ozone depleting factor
chlorofluorocarbon-11	1.0
chlorofluorocarbon-12	1.0
chlorofluorocarbon-22	0.05
chlorofluorocarbon-113	0.8
chlorofluorocarbon-114	1.0
chlorofluorocarbon-115	0.6
chlorofluorocarbon-123	0.02
chlorofluorocarbon-124	0.02
chlorofluorocarbon-141 (b)	0.1
chlorofluorocarbon-142 (b)	0.06
carbon tetrachloride	1.06
Methyl chloroform	0.10
halon-1211	3.0
halon-1301	10.0
halon-2402	6.0

SEC. 6. REPORTING REQUIREMENTS.

(a) PRIORITY LIST.—Within ninety days after enactment of this Act, each person producing a substance listed pursuant to subsection (a) of section 5 shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during calendar year 1986. Not less than annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive twelve-month period until such producer ceases production of the substance. Each such report shall be signed by a responsible corporate officer.

(b) OTHER REGULATED SUBSTANCES.—Within ninety days of the date on which a substance is placed on the list under subsection (b) of section 5, each person shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during the twelve months preceding the date of listing. Not less than annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive twelve-month period until such producer ceases production of the substance. Each such report shall be signed by a responsible corporate officer.

SEC. 7. PRODUCTION PHASE-OUT OF SUBSTANCES ON THE PRIORITY LIST.

(a) PRODUCTION FREEZE.—Effective July 1, 1989, it shall be unlawful for any person to produce a substance listed under subsection (a) of section 5 in annual quantities greater than that produced by such person during calendar year 1986.

(b) PHASE ONE REDUCTION.—Effective July 1, 1992, it shall be unlawful for any person to produce a substance listed under subsection (a) in section 5 in annual quantities greater than 80 per centum of that produced by such person during calendar year 1986.

(c) PHASE TWO REDUCTION.—Effective July 1, 1995, it shall be unlawful for any person to produce a substance listed under subsection (a) in section 5 in annual quantities greater than 50 per centum of that produced by such person during calendar year 1986.

(d) PHASE THREE REDUCTION.—Effective July 1, 1997, it shall be unlawful for any person to produce any quantity of a substance listed under subsection (a) of section 5 unless such person has, in accordance with subsection (e), received prior authorization to produce such substance.

(e) EXCEPTION FOR MEDICAL PURPOSES.—Notwithstanding the prohibition set forth in subsection (d), the Administrator, in consultation with the Commissioner of the Food and Drug Administration and after notice and opportunity for public comment, may authorize the production of limited quantities of a substance listed under subsection (a) of section 5 solely for medical purposes if such authorization is determined to be necessary for medical purposes.

SEC. 8. PRODUCTION PHASE-OUT EXCEPTION FOR NATIONAL SECURITY.

The President may issue such orders regarding production and use of halon-1211, halon-1301 and halon-2402, at any specified site or facility as may be necessary to protect the national security interests of the United States if the President finds that adequate substitutes are not available and that the production and use of such substance is necessary to protect such national security interests. Such orders may include, where necessary to protect such interests, an exemption from any requirement contained in this Act. The President shall notify the Congress within thirty days of the issuance of an order under this paragraph providing for any such exemption. Such notification shall include a statement of the reasons for the granting of the exemption. An exemption under this paragraph shall be for a specified period which may not exceed one year. Additional exemptions may be granted, each upon the President's issuance of a new order under this paragraph. Each such additional exemption shall be for a specified period which may not exceed one year. No exemption shall be granted under this paragraph due to lack of appropriation unless the President shall have specifically requested such appropriation as a part of the budgetary process and the Congress shall have failed to make available such requested appropriation.

SEC. 9. LIMITATIONS ON USE AND DISPOSAL.

(a) The Administrator shall, not later than July 1, 1991, promulgate regulations establishing standards and requirements regarding the use of substances covered by this Act. Such regulations shall include requirements that reduce the use and emission of such substances to the lowest achievable level and may include requirements to use alternative substances (including substances which are not covered by this Act), minimize use of substances covered by this Act, or maximize the recapture and recycling of substances covered by this Act.

(b) The Administrator shall promulgate regulations establishing standards and requirements regarding the use of any manufactured substance that may, either directly as a radiatively important trace gas or indirectly as a substance that reduces the energy efficiency of products which incorporate or use such substance, exacerbate the problem of human induced global climate change.

(c) The Administrator shall, before January 1, 1994, promulgate regulations establishing standards and requirements for the recapture, recycling, and safe disposal of substances covered by this Act. Such regulations shall include requirements that—

(1) substances covered by this Act that are contained in bulk in appliances, machines or other goods (including but not limited to refrigerators and air-conditioners) shall be removed from each such appliance, machine or other good prior to the disposal of such item;

(2) any appliance, machine or other good containing a substance covered by this Act in bulk shall not be manufactured or distributed in commerce unless it is equipped with a servicing aperture which will allow the recapture of such substance during service and repair of such item; and

(3) any product in which a substance covered by this Act is incorporated so as to constitute an inherent element of such product, including but not limited to rigid and soft foams, shall be disposed of in a manner that prevents the release of such substance into the environment.

(d) Effective January 1, 1993, it shall be unlawful for any person to knowingly vent into the atmosphere or otherwise knowingly use, release, or dispose of any substance covered by this Act (other than halon-1211, halon-1301, and halon-2402) in a fashion which permits such substance to enter the environment. Releases associated with the approved use of medical devices and diagnostic products for medical purposes and de minimus releases associated with good-faith attempts to recapture and recycle or safely dispose of any substance covered by this Act shall not be covered by the preceding sentence. The first sentence of this subsection shall not apply to releases associated with the servicing or repair of equipment which contains substances covered by this Act but does not include a servicing aperture which allows the recapture of such substances if, during the first servicing or repair after the effective date of this Act, such servicing aperture or other similar features are installed.

(e) Effective July 1, 1997, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (a) of section 5 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, and, for a period not to exceed ten years after July 1, 1997, to maintain and service household appliances.

SEC. 10. LIMITATION ON OZONE DEPLETION POTENTIAL.

(a) Effective July 1, 1989, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 5, yield a total ozone depletion potential greater than that produced by such person during calendar year 1986. The prohibition set forth in the preceding sentence shall remain in effect until the effective date of regulations promulgated in accordance with subsection (b) or July 1, 1993, whichever is earlier.

(b) Prior to July 1, 1992, the Administrator shall promulgate regulations establishing production limitations for substances covered by this Act that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 5 and calendar year 1986 production levels, yield not less than a 95 per centum reduction in total ozone depletion potential in 1997. If the Administrator fails to promulgate regulations in accordance with this subsection, effective July 1, 1997, it shall be unlawful for any person to produce substances covered by this Act in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 5, yield a total ozone depletion potential greater than 5 per centum of that produced by such person during calendar year 1986.

SEC. 11. ACCELERATED SCHEDULE.

The Administrator shall promulgate regulations, after notice and opportunity for public comment, which require each producer to reduce its production of—

(1) a substance listed under subsection (a) of section 5 more rapidly than the schedule provided under this Act; or

(2) a substance listed under subsection (b) of section 5 on a specific schedule not otherwise provided for in this Act

if the Administrator determines that such revised or specific schedule (A) based on new information regarding the harmful effects on the stratosphere or climate which may be associated with a listed substance, may be necessary to protect human health and the environment or (B) based on the availability of substitutes for a listed substance, is attainable. Any person may petition the Administrator to issue such regulations. The Administrator shall issue such regulations within one hundred and eighty days after receipt of any such petition, unless the Administrator determines that such regulations are not necessary and denies the petition. No less often than every eighteen months, the Adminstrator shall, in response to a petition or otherwise, either publish such regulations or a determination that such regulations are not necessary.

SEC. 12. CERTIFICATION OF EQUIVALENT PROGRAMS.

(a) IMPORTS.—Effective twelve months after the date on which a substance is placed on the priority list under subsection (a) of section 5, it shall be unlawful for any person to import such substance, any product containing such substance, or any product manufactured with a process that uses such substance unless the Administrator, in consultation with the Secretary of State (the Secretary), has published a decision, after notice and opportunity for public comment, certifying that the nations in which such substance or product was manufactured and from which such substance or product is imported have established and are fully implementing programs that require reduced production of such listed substance, and limit production of other substances covered by this Act, on a schedule and in a manner that is at least as stringent as the reduction schedule for, and limitations on, domestic production which apply under this Act. The prohibition on the import of any product manufactured with a process that uses a substance listed under subsection (a) of section 5 shall include, after notice and opportunity for public comment, any product which the Administrator has reason to believe may have been manufactured with a process that uses such substance. The Administrator's decision that a product may have been manufactured with a process that uses such substance shall constitute a rebuttable presumption.

(b) CERTIFICATION OF NATIONAL PROGRAM.—The Administrator shall not certify any national program under subsection (a) unless it is determined that—

(1) the Nation has adopted legislation or regulations which give the reduction schedule for each listed substance the force of law; and

(2) the legislation or regulations include reporting requirements and enforcement provisions no less stringent than those specified in sections 6 and 14 of this Act, and that the information contained in such reports is available to the Administrator and the Secretary.

(c) REVOCATION.—At least annually, the Administrator, in consultation with the Secretary, shall review each certification made under this section and shall revoke such certification, after notice and opportunity for public comment, unless it is determined that the conditions of subsections (a) and (b) remain satisfied and that the reduction schedule for each listed substance is in fact being carried out in such nations. Any such revocation shall take effect one hundred and eighty days after notice of the revocation has been published.

(d) ALLOCATION.—Any person who imports a substance covered by this Act or a product containing such substance shall, for the purposes of section 7 (production phase-out for priority list) and section 10 (limitation on ozone depletion potential), shall be deemed to have produced an equivalent amount of such substance on the date of such importation.

SEC. 13. LABELING.

(a) Effective eighteen months after the date on which a substance is placed on a list maintained under subsection (a) or (b) of section 5, no container in which such substance is stored or transported, no product containing such substance, and no product manufactured with a process that uses a listed substance shall be introduced into interstate commerce unless it bears a label stating either of the following, as appropriate:

(1) "Contains (insert name of listed substance) a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate".

(2) "Manufactured with (insert name of listed substance) a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate".

The Administrator shall issue regulations to implement the labeling requirements of this section within one year after enactment of this section, after notice and opportunity for public comment. Such regulations shall require all containers and products which are subject to this section and introduced or reintroduced into commerce later than ninety days after promulgation of such regulations to bear the appropriate label.

SEC. 14. FEDERAL ENFORCEMENT.

(a) COMPLIANCE ORDERS.—(1) Whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of this Act, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both, or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

(2) Any order issued pursuant to this subsection may include a suspension or revocation of any permit issued by the Administrator under this Act and shall state with reasonable specificity the nature of the violation. Any penalty assessed in the order shall not exceed $25,000 per day of noncompliance for each violation of a requirement of this Act. In

assessing such a penalty, the Administrator shall take into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(b) PUBLIC HEARING.—Any order issued under this section shall become final unless, no later than thirty days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

(c) VIOLATION OF COMPLIANCE ORDERS.—If a violator fails to take corrective action within the time specified in a compliance order, the Administrator may assess a civil penalty of not more than $25,000 for each day of continued noncompliance with the order and the Administrator may suspend or revoke any permit issued to the violator.

(d) CRIMINAL PENALTIES.—Any person who—

(1) knowingly exceeds the production limits under section 7 (production phase-out for initial list) or section 10 (limitation on ozone depletion potential);

(2) knowingly introduces into interstate commerce a substance that was produced in violation of section 7 or section 10;

(3) knowingly imports a substance listed under subsection (a) of section 5, a product containing such substance, or a product manufactured with a process that uses such substance, in violation of section 12 (certification of equivalent programs);

(4) knowingly vents or releases a substance into the environment in violation of section 9 (limitations on use and disposal);

(5) knowingly introduces into interstate commerce a substance or product in violation of section 9 (limitation on use and disposal) or section 13 (labeling);

(6) knowingly omits material information or makes any false material statement or representation in any application, record, report, permit, or other document filed, maintained, or used for purposes of compliance with this Act; or

(7) knowingly produces, transports, distributes, or uses any substance listed under section 5, a product containing such substance, or a product manufactured with a process that uses such substance, and who knowingly destroys, alters, conceals, or fails to file any record, application, report, or other document required to be maintained or filed for purposes of compliance with this Act

shall, upon conviction, be subject to a fine in accordance with title 18 of the United States Code for each day of a violation, or imprisonment not to exceed two years, or both. If conviction is for a violation committed after a first conviction of such person under this paragraph, the maximum punishment under the respective paragraph shall be doubled with respect to both fine and imprisonment.

(e) CIVIL PENALTY.—Any person who violates any requirement of this Act shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation.

(f) VIOLATIONS.—Each day of violation of any requirement of this Act shall, for purposes of this section, constitute a separate violation. In addition, for purposes of section 7 (production phase-out for initial list), section 9 (limitation on use and disposal), section 10 (limitation on ozone depletion potential), and paragraphs (1), (2), (3), and (5) of subsection (d) of this section, the production, introduction into commerce, or importation of each one hundred pounds of a substance listed under subsection (a) of section 5 that is in excess of the production limits under section 7 or section 10 shall constitute a separate violation.

SEC. 15. JUDICIAL REVIEW OF FINAL REGULATIONS AND CERTAIN PETITIONS.

Any judicial review of any final action of the Administrator pursuant to this Act shall be in accordance with sections 701 through 706 of title 5 of the United States Code, except that—

(1) a petition for review of any final action of the Administrator may be filed by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts business, and such petition shall be filed within ninety days from the date of such promulgation or denial or after such date if such petition is for review based solely on grounds arising after such ninetieth day; action of the Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement; and

(2) if a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to

be adduced upon the hearing in such manner and upon such terms and conditions as the court may deem proper; the Administrator may modify administrative findings as to the facts, or make new findings, by reason of the additional evidence so taken, and shall file with the court such modified or new findings and the Administrator's recommendation, if any, for the modification or setting aside of the original administrative order, with the return of such additional evidence.

SEC. 16. CITIZEN SUITS.

(a) IN GENERAL.—Except as provided in subsection (b) or (c) of this section, any person may commence a civil action on his own behalf—

(1) against any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this Act; or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this Act which is not discretionary with the Administrator.

Any action under paragraph (a)(1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred. Any action brought under paragraph (a)(2) of this subsection may be brought in the district court for the district in which the alleged violation occurred or the District Court of the District of Columbia. The district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce the permit, regulation, condition, requirement, prohibition, or order, referred to in paragraph (1), to order such person to take such other action as may be necessary, or both, or to order the Administrator to perform the act or duty referred to in paragraph (2), as the case may be, and to apply any appropriate civil penalties under section 14.

(b) ACTIONS PROHIBITED.—No action may be commenced under subsection (a)(1) of this section—

(1) prior to sixty days after the plaintiff has given notice of the violation to—

(A) the Administrator; and

(B) to any alleged violator of such permit, regulation, condition, requirement, prohibition, or order; or

(2) if the Administrator has commenced and is diligently prosecuting a civil or criminal action in a court of the United States to require compliance with

such permit, regulation, condition, requirement, prohibition, or order.

In any action under subsection (a)(1), any person may intervene as a matter of right. Any action respecting a violation under this Act may be brought under this section only in the judicial district in which such alleged violation occurs.

(c) NOTICE.—No action may be commenced under paragraph (a)(2) of this section prior to sixty days after the plaintiff has given notice to the Administrator that he will commence such action. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(d) INTERVENTION.—In any action under this section the Administrator, if not a party, may intervene as a matter of right.

(e) COSTS.—The court, in issuing any final order in any action brought pursuant to this section or section 15, may award costs of litigation (including reasonable attorney and expert witness fees) to the prevailing or substantially prevailing party, whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(f) OTHER RIGHTS PRESERVED.—Nothing in this section shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or requirement or to seek any other relief (including relief against the Administrator).

SEC. 17. SEPARABILITY.

If any provision of this Act, or the application of any provision of this Act to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this Act, shall not be affected thereby.

SEC. 18. RELATIONSHIP TO OTHER LAWS.

(a) Nothing in this Act shall be construed to alter or affect the authority of the Administrator under the Clean Air Act or the Toxic Substances Control Act or to affect the authority of any other department or agency, or instrumentality of the United States under any provision of law to promulgate or enforce any requirement respecting the control of any substance, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere.

(b) Nothing in this Act shall preclude or deny any State or political subdivision thereof from adopting or enforcing any requirement respecting the control of any substances, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere.

SEC. 19. AUTHORITY OF ADMINISTRATION.

The Administrator is authorized to prescribe such regulations as are necessary to carry out this Act.

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II

101st CONGRESS
1st Session

S. 503

To protect the ozone layer by reducing chlorofluorocarbons and halons, and for other purposes.

IN THE SENATE OF THE UNITED STATES

MARCH 2 (legislative day, JANUARY 3), 1989

Mr. BAUCUS (for himself and Mr. CHAFEE) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

To protect the ozone layer by reducing chlorofluorocarbons and halons, and for other purposes.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SHORT TITLE

SECTION 1. This Act may be cited as the "Chlorofluorocarbons and Halon Reduction Act of 1989".

FINDINGS

SEC. 2. The Congress finds that—

(1) restrictions on the production of chloroflourocarbons (CFCs) and halons are essential to safeguarding the earth's ozone layer, reducing the greenhouse

effect, and protecting human health and the environment;

(2) restrictions on chlorofluorocarbons and halon production, as required under the Montreal Protocol on Substances that Deplete the Ozone Layer and by Environmental Protection Agency regulations, will restrict the supply and therefore increase the price of these chemicals, and that increased prices provide a greater economic incentive for firms using these chemicals to increase recycling, while also providing an incentive for the introduction of chlorofluorocarbons and halon substitute chemicals;

(3) future revenues from higher chlorofluorocarbons and halon prices, resulting from regulatory restrictions to protect human health and the environment, should be used for the benefit of the public. As such, some portion of these revenues should be made available in an equitable manner to facilitate and expedite the shift away from the harmful chlorofluorocarbons and halons by chlorofluorocarbons and halon producer and user firms;

(4) because of the worldwide recognition of the need to move away from using ozone-depleting chemicals, strong international competition now exists to develop chemical substitutes and to produce chlorofluoro-

carbons- and halon-free products including refrigerators, electronic components, various foams, and automobile and commercial air conditioners. United States chemical producers and chlorofluorocarbons and halon user industries should be encouraged to successfully participate in this competition by developing improved chemicals and products that do not rely on chlorofluorocarbons and halons; and

(5) special emphasis should be placed on developing new chlorofluorocarbons- and halon-free products and technologies with improved energy efficiency as a means of protecting the ozone layer and contributing to reductions in global warming.

OBJECTIVES AND NATIONAL GOAL

SEC. 3. (a) The objective of this Act is to provide for a smooth transition away from the use of ozone-depleting chemicals in order to protect the earth's ozone layer and to limit global warming.

(b) In order to achieve that objective, the national goal is to provide for an orderly and equitable shift to alternative chemicals and products and to facilitate the competitiveness of United States industry at home and abroad.

DEFINITIONS

SEC. 4. As used in this Act, the term—

(1) "Administrator" means the Administrator of the Environmental Protection Agency;

(2) "assessment year" means the 12-month period as set forth in section 6(a) or as hereafter modified pursuant to this Act; and

(3) "ozone-depleting chemicals" refers to those chemicals listed in section 5(a) as may be modified by section 5(b);

(4) "secretary" means the Secretary of the Treasury.

IMPOSITION OF PRODUCTION AND IMPORTATION CHARGE ON OZONE-DEPLETING CHEMICALS

SEC. 5. (a)(i) Within 60 days following the date of the enactment of this Act, the Administrator shall issue such regulations as may be necessary, commencing with the effective date provided by the following table, to impose an ozone-protection charge on producers and importers of the following chemicals:

Ozone-Depleting Chemical	Effective Date
Trichlorofluoromethane (CFC-11)	July 1, 1989;
Dichlorodifluoromethane (CFC-12)	July 1, 1989;
Trichlorotrifluoroethane (CFC-113)	July 1, 1989;
Dichlorotetrafluoroethane (CFC-114)	July 1, 1989;
(Mono) chloropentafluoroethane (CFC-115)	July 1, 1989;
Bromochlorodifluoroethane (Halon 1211)	January 1, 1992;
Bromotrifluorethane (Halon 1301)	January 1, 1992; and
Dibromotetrafluoroethane (Halon 2402)	January 1, 1992.

(ii) Within 60 days following the date of enactment of this Act, the Secretary shall issue such regulations to collect the production charge.

(b) The Administrator shall promulgate regulations adding to the list of ozone-depleting chemicals referred to in subsection (a), chemicals which are known or can reasonably be anticipated to cause or contribute to stratospheric ozone depletion and whose production and importation he determines should be limited to protect public health and the environment. The Administrator shall also promulgate changes to the effective dates in subsection (a) if such changes are necessary to protect public health and the environment and are in furtherance of the goal and objective of this Act set forth in section 3.

(c) In promulgating such regulations, the Administrator shall take such action as may be necessary to assure that no production or importation charge shall be imposed on any such chemicals that are used and entirely consumed in the production of other chemicals.

SETTING THE AMOUNT OF THE CHARGE

SEC. 6. (a)(1) For each assessment year, the production charge shall be estimated using the procedures set forth in this section. The production charge for each assessment period will be the greater of the amounts calculated under this subsection or subsection (b).

(2) The amount of the production charge shall be calculated on the basis of the following schedule:

(A) Chlorofluorocarbons—

Assessment Period	Amount of Base Charge
July 1, 1989 to Sept. 30, 1989	$ .25/pound
Oct. 1, 1989 to Sept. 30, 1990	$ .50/pound
Oct. 1, 1990 to Sept. 30, 1991	$1.00/pound

Oct. 1, 1991 to Sept. 30, 1992	$1.50/pound
Oct. 1, 1992 to Sept. 30, 1993	$2.00/pound
Oct. 1, 1993 to Sept. 30, 1994	$2.50/pound

and for every 12 month period thereafter $2.50/pound.

(B) Halons—

Assessment Period	Amount of Base Charge
Jan. 1, 1992 to Sept. 30, 1992	$1.50/pound
Oct. 1, 1992 to Sept. 30, 1993	$1.50/pound

and for every twelve month period thereafter $1.50/pound.

(3) The Administrator shall promulgate regulations modifying the assessment periods consistent with any changes to the effective dates adopted under section 5(b).

(4) The Administrator shall promulgate regulations modifying the amount of the base charge to reflect future changes in the expected price and availability of substitutes and alternative technologies to ozone-depleting chemicals.

(5) The base charge shall be assessed against each pound (or portion thereof) of ozone-depleting chemical produced or imported multiplied by that chemical's ozone-depletion factor. The ozone-depletion factors for the covered chemicals are the following:

Ozone-Depleting Chemical	Ozone Depletion Factor
CFC–11	1.0
CFC–12	1.0
CFC–113	0.8
CFC–114	1.0
CFC–115	0.6
Halon 1211	3.0
Halon 1301	10.0
Halon 2402	6.0

(b)(1) The Administrator shall promulgate regulations modifying the factors or adding to the list in subsection (a) consistent with actions under section 5(b).

(2) The charge shall be based on the calculated increase in revenues that result from the restrictions on the ozone-depleting chemicals in an assessment period. The charge shall be calculated by the Administrator as the total revenues from the sale of the ozone-depleting chemicals minus the estimated costs of production and reasonable rate of return.

(3) Total revenues shall be determined by the Administrator based on reports required by the Administrator, by regulation, from each firm producing ozone-depletion chemicals for that assessment year. The reports shall include the total revenues from sales of ozone-depleting chemicals broken down by chemical. The reports shall be received by the Administrator within 30 days of the end of an assessment period.

(4) Costs of production and reasonable rate of return shall be calculated by the Administrator as the 1986 weighted average price calculated separately for chlorofluorocarbons and for halons. To reflect future changes in production costs, the 1986 estimated weighted average price shall be multiplied each year by the producer price index for basic inorganic chemicals (published by the Department of Labor) for the period covered by that assessment year.

(5) Regulations by the Administrator shall permit individual companies to petition the Administrator with documentation showing that their production costs have increased more than the industry average. The Administrator shall modify the application of the calculation of production costs if a valid showing is made.

(6) The charge for importing ozone-depleting chemicals identified in section 5(a) shall be the same charge as calculated for the production of those same chemicals in the applicable assessment period. The charge shall be assessed against the importer of record as listed on United States Customs Service Form 7501.

(7) The Administrator shall notify producers and importers of the amount of their totaled assessed charge within 60 days of the end of the assessment period. Firms have within 30 days of the date of receipt of their assessment to submit full payment to the Secretary.

(8) Firms exporting ozone-depleting substances shall apply to the Administrator for refunds for the calculated charge for the quantity of ozone-depleting chemicals that they exported in each assessment period. Applications for refunds must be submitted to the Administrator for approval within 30 days of the end of the applicable assessment period. The Administrator shall review the request for a refund and notify both the requestor and the Treasury within 60 days of

its approval of such requests. Approved requests for refunds shall be paid by the Secretary.

SUPPORT FOR RESEARCH RELATED TO TECHNOLOGICAL ALTERNATIVES TO OZONE-DEPLETING CHEMICALS

SEC. 7. (a) All moneys received by the Secretary pursuant to this Act for any assessment year, up to $100 million, shall be deposited in the Ozone Layer and Climate Protection Trust Fund established by section 10 of this Act. All moneys so received in any assessment year in addition to such $100 million shall be deposited in the Treasury of the United States as miscellaneous receipts.

(b)(1) Moneys in the Trust Fund shall be available for research grants as follows:

(A) 30 percent to support research related to substitutes for ozone-depleting chemicals by chemical producers; and

(B) 70 percent to support research into alternative products that are produced without ozone-depleting chemicals covered by this Act.

(2) The research referred to in paragraph (1) shall include testing the basic properties of chemical substitutes; testing the applicability of possible substitutes in specific products; examining health, environmental, and safety issues related to the use of possible chemical substitutes; improving the energy efficiency of alternative technologies; monitoring environmental impacts; and other related purposes.

ADVISORY COMMITTEE

SEC. 8. (a) The Administrator shall establish an advisory committee to advise him in connection with research to be carried out pursuant to this Act. Such committee shall be comprised of individuals who are representatives of chlorofluorocarbons and halon producers and users, the Department of Defense (designated by and with the approval of the Secretary of Defense), the Department of Commerce (designated by and with the approval of the Secretary of Commerce), and public interest groups. Members of the Committee will serve without additional pay as such.

(b) It shall be the function of the advisory committee, at the request of the Administrator, to advise and make recommendations to the Administrator as to research to be carried out pursuant to this Act, and the making of grants to carry out such research.

(c) In carrying out its function, the advisory committee shall consider, among other things, the quantities of ozone-depleting chemicals the proposed technology would replace; the timing of possible reductions with preference given to near-term technologies; the effect of global climate change; the likelihood of commercialization of the technology; the degree of public and private participation and support for a proposed project; the extent to which the research results of the project will be accessible to the public; and the energy efficiency that would result from the project.

GRANTS

SEC. 9. (a) The Administrator is authorized to establish and carry out a grant program for the purpose of carrying out research authorized by this Act. Grants made under such program may be made to public and private entities, or combinations thereof, including consortia established expressly for the purpose of conducting research pursuant to this Act.

(b) Applications for grants under this Act shall be submitted as such time and in such form and contain such information as the Administrator shall prescribe by regulation.

TRUST FUND

SEC. 10. (a) There is established in the Treasury of the United States a trust fund to be known as the "Ozone Layer and Climate Protection Trust Fund" (referred to in this Act as the "Trust Fund"). The Trust Fund shall consist of such amounts as may be deposited in it as provided in this Act.

(b) Amounts in the Trust Fund shall be available, as provided by appropriation Acts, to carry out the grant program under this Act.

(c) It shall be the duty of the Secretary of the Treasury to report to the Congress each year on the financial condition and the results of the operation of the Trust Fund during the preceding fiscal year and on its expected condition and operations during the next 5 fiscal years.

(f)(1) It shall be the duty of the Secretary of the Treasury to invest such portion of the Trust Fund as is not, in his judgment, required to meet current withdrawals. Such investments may be made only in interest-bearing obligations of the United States. For such purpose, such obligations may be acquired—

(A) as original issue at the issue price, or

(B) by purchase of outstanding obligations at the market price.

(2) Any obligation acquired by such Trust Funds may be sold by the Secretary of the Treasury at market price. The interest on, and the proceeds from the sale or redemption of, such obligation held in such Trust Fund shall be credited to and become a part of the Trust Fund.

AUTHORIZATIONS

SEC. 11. There are authorized to be appropriated from the Ozone Layer and Climate Protection Trust Fund such amounts as may be necessary to carry out the grant program under this Act.

II

101st CONGRESS
1st Session

S. 676

Relating to global atmospheric and environmental preservation.

IN THE SENATE OF THE UNITED STATES

March 17 (legislative day, January 3), 1989

Mr. Baucus (for himself, Mr. Durenberger, and Mr. Lieberman) introduced the following bill; which was read twice and referred to the Committee on Environment and Public Works

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A BILL

Relating to global atmospheric and environmental preservation.

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled,

SECTION 1. SHORT TITLE.

This Act may be cited as the "Global Environmental Protection Act of 1989".

SEC. 2. FINDINGS.

The Congress, recognizing the profound, irreversible and potentially catastrophic impacts of humanity's activities on the global atmosphere and the world's environment, and the inability of science to predict with certainty the consequences for humanity of any such changes, hereby declares

that each person has a responsibility and obligation to avoid contamination of the atmosphere.

TITLE I—ELIMINATION AND REGULATION OF GLOBAL CHANGE POLLUTANTS

PART A—CHLOROFLUOROCARBONS AND RELATED CHEMICALS

SEC. 101. SHORT TITLE.

This title may be cited as the "Global Stratospheric Ozone and Climate Preservation Act of 1989".

SEC. 102. FINDINGS.

The Congress finds that—

(1) the best available scientific evidence shows that manufactured substances, including chlorofluorocarbons, are polluting the atmosphere and destroying stratospheric ozone, as well as contributing to global climate change, and other atmospheric modifications;

(2) no level of stratospheric ozone depletion or global climate change caused by human activities can be deemed safe;

(3) stratospheric ozone depletion will lead to increased incidence of solar ultraviolet radiation at the surface of the Earth;

(4) increased incidence of solar ultraviolet radiation will cause increased rates of disease in humans

(including skin cancer), threaten food crops, and otherwise damage the natural environment;

(5) stratospheric ozone depletion and global climate change from continued emissions of chlorofluorocarbons and other halogenated carbons with ozone depleting potential, and emissions of other gases, imperil human health and the environment worldwide;

(6) in order to stabilize and eventually reduce concentrations of chlorine and bromine in the stratosphere, to conserve the stratospheric ozone layer (an exhaustible natural resource), and to reduce the extent of global climate change—

(A) emissions of chlorofluorocarbons and other substances covered by this title, including halogenated carbons with ozone depleting potential, should be terminated rapidly, and

(B) it is necessary to control international trade in substances covered by this title and products containing or made with processes that use such substances;

(7) the highest priority must be given to developing and deploying safe substitutes to replace ozone depleting substances within 4 years; and

(8) the United States needs to develop and deploy safe substitutes to replace ozone depleting substances

in order to demonstrate to the world its commitment to protect the stratosphere.

SEC. 103. OBJECTIVES AND NATIONAL GOAL.

(a) The objectives of this title are to restore and maintain the chemical and physical integrity of the Earth's atmosphere and to protect human health and the global environment from all known and potential dangers due to atmospheric or climatic modification, including stratospheric ozone depletion, that is or may be related to the chlorofluorocarbons or other substances covered by this title by—

(1) reducing significantly the production and emission into the atmosphere of pollutants caused by human activities;

(2) promoting the rapid development and deployment of alternatives to the use of the chlorofluorocarbons and other substances covered by this title; and

(3) promoting additional scientific research on atmospheric or climatic modification, including stratospheric ozone depletion, and on the known and potential adverse effects therefrom on human health and the global environment.

(b) In order to achieve the objectives of this title, it is the national goal to eliminate atmospheric emissions of manufactured substances with ozone depleting potential, including chlorofluorocarbons and other halogenated carbons with ozone depleting potential, and to reduce significantly emissions of other gases caused by human activities that are likely to affect adversely the global climate.

SEC. 104. DEFINITIONS.

As used in this title, the term—

(1) "Administrator" means the Administrator of the Environmental Protection Agency;

(2) "household appliances" means noncommercial personal effects, including air-conditioners, refrigerators, and motor vehicles;

(3) "import" means to land on, bring into, or introduce into, or attempt to land on, bring into, or introduce into, any place subject to the jurisdiction of the United States, whether or not such landing, bringing, or introduction constitutes an importation within the meaning of the customs laws of the United States;

(4) "manufactured substances" means any organic or inorganic chemical substances of a particular molecular identity, or any mixture, that has been manufactured for commercial purposes;

(5) "medical purposes" means medical devices and diagnostic products (A) for which no safe substitute has been developed and (B) which, after notice and opportunity for public comment, has been approved and determined to be essential by the Commissioner of the

Food and Drug Administration, in consultation with the Administrator;

(6) "person" means an individual, corporation (including a government corporation), partnership, firm, joint stock company, trust, association, or any other private entity, or any officer, employee, agent, department, or instrumentality of the Federal Government, of any State or political subdivision thereof (including any interstate body), or of any foreign government (including any international instrumentality); and

(7) "substances covered by this title" means those substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion, and are listed under subsections (a) or (b) of section 105.

SEC. 105. LISTING OF REGULATED SUBSTANCES.

(a) Within 60 days after the date of the enactment of this title into law, the Administrator shall publish a priority list, to be designated as number 1, of manufactured substances which are known or may reasonably be anticipated to cause or contribute to atmospheric or climatic modification, including stratospheric ozone depletion. The initial list shall include chlorofluorocarbon-11, chlorofluorocarbon-12, chlorofluorocarbon-113, chlorofluorocarbon-114, chlorofluorocarbon-115, halon-1211, and halon-1301.

(b) Simultaneously with publication of such priority lists, the Administrator shall create a list of other manufactured substances which, in the judgment of the Administrator, meet the criteria set forth in the first sentence of subsection (a). The list of other substances shall be subject to the limitations on ozone depletion potential under section 109 of this title and shall include chlorofluorocarbon-22, carbon tetrachloride, methyl chloroform, and methylene chloride. At least annually thereafter, the Administrator shall publish a proposal to add to such list each other manufactured substance which, in the judgment of the Administrator, meets the criteria set forth in the first sentence of subsection (a). Within 180 days of any such proposal, after allowing an opportunity for public comment, the Administrator shall promulgate a regulation adding each such substance to the list, unless the Administrator determines that such substance clearly does not meet the criteria set forth in the first sentence of subsection (a).

(c) Simultaneously with publication of the list or additions thereto under this section, and at least annually thereafter, the Administrator shall assign to each listed substance a numerical value representing the ozone depletion potential of such substance, on a mass (per kilogram) basis, as compared with chlorofluorocarbon-11. The numerical value shall, for the purposes of section 9, constitute the ozone depletion factor of each such substance. Until the Administrator promulgates regulations under this subsection, the following ozone depletion factors shall apply:

Substance	Ozone depleting factor
chlorofluorocarbon-11	1.0
chlorofluorocarbon-12	1.0
chlorofluorocarbon-22	0.05
chlorofluorocarbon-113	0.78
halon-1211	2.69
halon-1301	11.43

SEC. 106. REPORTING REQUIREMENTS.

(a) Within 90 days after the date of the enactment of this title into law, each person producing a substance listed pursuant to subsections (a) and (b) of section 105 shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during calendar year 1986. Not later than December 31, 1989, and annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive 12-month period until such producer ceases production of the substance. Each such report shall be signed and attested by a responsible corporate officer.

(b) Within 90 days of the date on which substance is placed on the list under subsection (c) of section 105, each person shall file a report with the Administrator setting forth the amount of the substance that was produced by such person during the 12 months preceding the date of listing.

Not less than annually thereafter, each producer shall file a report with the Administrator setting forth the production levels of such substance in each successive 12-month period until such producer ceases production of the substance. Each such report shall be signed and attested by a responsible corporate officer.

SEC. 107. PRODUCTION PHASEOUT.

(a) Effective January 1, 1989, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than that produced by such person during calendar year 1986.

(b) Effective January 1, 1993, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 80 per centum of that produced by such person during calendar year 1986.

(c) Effective January 1, 1998, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 50 per centum of that produced by such person during calendar year 1986.

(d) Effective January 1, 1999, it shall be unlawful for any person to produce a substance listed pursuant to subsection (a) of section 105 in annual quantities greater than 25 per centum of that produced by such person during calendar year 1986.

(e) Effective January 1, 2000, it shall be unlawful for any person to produce or release a substance listed pursuant to subsection (a) or (b) of section 105 for any use other than medical purposes.

SEC. 108. LIMITATION ON USE.

Effective January 1, 1994, it shall be unlawful to introduce into interstate commerce or to use a substance listed under subsection (a) of section 105 except for medical purposes approved by the Commissioner of the Food and Drug Administration, in consultation with the Administrator, in any newly manufactured good, except for a period not to exceed 24 months for insulating foam purposes.

SEC. 109. LIMITATION ON OZONE DEPLETION POTENTIAL.

(a) Effective January 1, 2010, it shall be unlawful for any person to produce substances covered by subsection (b) of section 105 in annual quantities that, based upon the ozone depletion factor assigned to each such substance under subsection (c) of section 105, yield a total ozone depletion or greenhouse warming potential greater than 5 per centum of that produced by such substances listed in subsection (a) of section 105 during calendar year 1986.

(b) The Administrator shall promulgate regulations, after notice and opportunity for public comment, which require each producer to reduce its production of—

(1) a substance listed under subsection (a) of section 105 more rapidly than the schedule provided under this title; or

(2) a substance listed under subsection (b) of section 105 on a specific schedule not otherwise provided for in this title,

if the Administrator determines that such revised or specific schedule (A) based on new information regarding the harmful effects on the stratosphere or climate which may be associated with a listed substance, is necessary to protect human health and the environment, or (B) based on the availability of substitutes for a listed substance, a substitute is attainable. Any person may petition the Administrator to issue such regulations. The Administrator shall issue such regulations within 180 days after receipt of any such petition, unless the Administrator denies the petition.

SEC. 110. PRODUCTION PHASEOUT EXCEPTION FOR NATIONAL SECURITY.

The President may issue such orders regarding production and use of halon-1211 and halon-1301 at any specified site or facility as may be necessary to protect the national security interests of the United States if the President personally finds that adequate substitutes are not available and that the production and use of such substance is necessary to protect such national security interests. Such orders may include, where necessary to protect such interests, an exemption from any requirement contained in this title. The President shall notify the Congress within 30 days of the issuance of an order under this paragraph providing for any such exemption. Such notification shall include a statement of the reasons for the granting of the exemption. An exemption under this paragraph shall be for a specified period which may not exceed 1 year. Additional exemptions may be granted, each upon the President's issuance of a new order under this paragraph. Each such additional exemption shall be for a specified period which may not exceed 1 year. No exemption shall be granted under this paragraph due to lack of appropriated funds unless the President shall have specifically requested such funds as a part of the budgetary process and the Congress shall have failed to make them available.

SEC. 111. CERTIFICATION OF EQUIVALENT PROGRAMS.

(a) Effective 12 months after the date on which a substance is placed on the priority list pursuant to section 105, it shall be unlawful for any person to import such substance, any product containing such substance, or any product manufactured with a process that uses such substance unless the Administrator, in consultation with the Secretary of State, has published a decision, after notice and opportunity for public comment, certifying that the nations in which such substance or product was manufactured and from which such substance or product is imported have established and are fully implementing programs that require reduced production of such listed substance, and limit production of other substances covered by this title, on a schedule and in a manner that is at least as stringent as the reduction scheduled for, and limitations on, domestic production which apply under this title. The prohibition on the import of any product manufactured with a process that uses a substance listed under subsection (a) of section 105 shall include, after notice and opportunity for public comment, any product which the Administrator has reason to believe may have been manufactured with a process that uses such substance. The Administrator's decision that a product may have been manufactured with a process that uses such substance shall constitute a rebuttable presumption.

(b) The Administrator shall not certify any national program under subsection (a) unless it is determined that—

(1) the nation has adopted legislation or regulations which give the reduction schedule for each listed substance the force of law; and

(2) the legislation or regulations include reporting requirements and enforcement provisions no less strin-

gent that those specified in this title, and that the information contained in such reports is available to the Administrator and the Secretary of State.

(c) At least annually, the Administrator, in consultation with the Secretary of State, shall review each certification made under this section and shall revoke such certification, after notice and opportunity for public comment, unless it is determined that the conditions of subsections (a) and (b) remain satisfied and that the reduction schedule for each listed substance is in fact being carried out in such nations. Any such revocation shall take effect 180 days after notice of the revocation has been published.

(d) Any person who imports a substance covered by this title or a product containing such substance shall, for the purposes of section 107 (production phaseout for priority list) and section 109 (limitation on ozone depletion potential), shall be deemed to have produced an equivalent amount of such substance on the date of such importation.

SEC. 112. LABELING.

Effective 90 days after the date on which a substance is placed on a list maintained under subsection (a) or (b) of section 105, no container in which such substance is stored or transported, no product containing such substance, and no product manufactured with a process that uses a listed substance shall be introduced into interstate commerce unless it bears a label stating either of the following, as appropriate:

(1) "Contains (insert name of listed substance) a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate".

(2) "Manufactured with (insert name of listed substance), a substance which harms public health and environment by destroying ozone in the upper atmosphere and by disrupting the climate".

The Administrator shall issue regulations to implement the labeling requirements of this section within 6 months after enactment of this section into law, after notice and opportunity for public comment. Such regulations shall require all containers and products which are subject to this section and introduced or reintroduced into commerce later than 90 days after promulgation of such regulations to bear the appropriate label. Unless and until such regulations have been promulgated and become effective, the required label shall be permanently affixed on the face of such product, with the lettering and background in contrasting colors and the letters themselves not less than two inches in height (or 20 percent of the height of the product which is less than four inches in height). Neither the labeling requirement nor any other provision of the Global Climate Protection Act of 1987 shall constitute, in whole or part, a defense to liability or a cause for reduction in damages in any suit, whether civil or criminal, brought under any law, whether Federal or State, other than a suit for failure to comply with the labeling requirements of this section.

SEC. 113. LIMITATIONS ON USE AND DISPOSAL.

(a) The Administrator shall, not later than July 1, 1991, promulgate regulations establishing standards and requirements regarding the use of substances covered by this Act. Such regulations shall include requirements that reduce the use and emission of such substances to the lowest achievable level and may include requirements to use alternative substances (including substances which are not covered by this Act), minimize use of substances covered by this Act, or maximize the recapture and recycling of substances covered by this Act.

(b) The Administrator shall promulgate regulations establishing standards and requirements regarding the use of any manufactured substance that may, either directly as a radiatively important trace gas or indirectly as a substance that reduces the energy efficiency of products which incorporate or use such substance, exacerbate the problem of human induced global climate change.

(c) The Administrator shall, before January 1, 1994, promulgate regulations establishing standards and requirements for the recapture, recycling, and safe disposal of substances covered by this Act. Such regulations shall include requirements that—

(1) substances covered by this Act that are contained in bulk in appliances, machines or other goods (including but not limited to refrigerators and air-conditioners) shall be removed from each such appliance, machine or other good prior to the disposal of such item;

(2) any appliance, machine or other good containing a substance covered by this Act in bulk shall not be manufactured or distributed in commerce unless it is equipped with a servicing aperture which will allow the recapture of such substance during service and repair of such item; and

(3) any product in which a substance covered by this Act is incorporated so as to constitute an inherent element of such product, including but not limited to rigid and soft foams, shall be disposed of in a manner that prevents the release of such substance into the environment.

(d) Effective January 1, 1993, it shall be unlawful for any person to knowingly vent into the atmosphere or otherwise knowingly use, release, or dispose of any substance covered by this Act (other than halon-1211, halon-1301, and halon-2402) in a fashion which permits such substance to enter the environment. Releases associated with the approved use of medical devices and diagnostic products for medical purposes and de minimus releases associated with good-faith attempts to recapture and recycle or safely dispose of any substance covered by this Act shall not be covered by the preceding sentence. The first sentence of this subsection shall not apply to releases associated with the servicing or repair of equipment which contains substances covered by this Act but does not include a servicing aperture which allows the recapture of such substances if, during the first servicing or repair after the effective date of this Act, such servicing aperture or other similar features are installed.

PART B—CARBON DIOXIDE

SEC. 114. SHORT TITLE.

This part may be cited as the Act to Reduce and Stabilize Atmospheric Concentrations of Carbon Dioxide.

SEC. 115. FINDINGS.

The Congress finds that—

(1) there is widespread agreement, and no credible scientific dispute, that increases in atmospheric concentrations of carbon dioxide will increase the temperature of the planet;

(2) current emissions of carbon dioxide are approximately 70 times as great as those a century ago;

(3) average concentrations of carbon dioxide in the absence of major contributions from human activity have ranged between 180 and 280 parts per million;

(4) the current concentration of carbon dioxide is approximately 380 parts per million;

(5) concentrations of carbon dioxide because of human activity are increasing at the rate of about 4 percent per decade;

(6) there has already been an observed increase in globally-averaged temperature of 0.7 degrees centigrade during the last century;

(7) increases in North Atlantic ocean temperatures of 0.2 to 0.3 degrees centigrade have been measured;

(8) ocean water levels have increased;

(9) the years 1981, 1983, 1987, and 1988, are the hottest on record;

(10) elevated temperatures and drought are now prevailing in many of the world's agricultural areas;

(11) all of these changes are consistent with predictions that increases in carbon dioxide will lead to global temperature increases;

(12) further temperature increases of as much as 4 degrees centigrade will be experienced by the year 2030 if concentrations of carbon dioxide and other trace gases continue to accelerate at current rates;

(13) even with stringent and immediate controls, global average temperatures are predicted to increase 1.0 to 2.5 degrees centigrade;

(14) scientists are unable to state with certainty whether the global environment will respond predictably to further temperature increases, especially if they occur in combination with other alterations in the atmosphere and oceans;

(15) probably consequences of further warming will include, but cannot with certainty be said to be limited to, the following:

(A) sea level rise of between 1 and 4 feet, accompanied by widespread flooding, estuary destruction, and increased frequency of extreme storm events such as cyclones;

(B) disappearance of many tree and plant species in areas where they now predominate; and

(C) widespread and endemic drought in many areas of the world which now supply the bulk of humanity's foods;

(16) to minimize further climate destruction and mitigate that which is already inevitable will require that atmospheric concentrations of carbon dioxide be stabilized;

(17) the level of carbon dioxide emission reductions necessary to achieve atmospheric stabilization is uncertain, but has been estimated by some to be 50 percent or more;

(18) given the uncertainty of the response of the global environment to further temperature increases, the prudent policy is to strive to minimize carbon dioxide emissions through all possible means rather than establish an arbitrary goal;

(19) between 20 and 25 percent of the worldwide emissions of carbon dioxide originate in the United States;

(20) technologies and practices exist which could reduce carbon dioxide emissions substantially;

(21) the adoption of these technologies and practices would increase the efficiency and competitiveness of the United States business and industrial sector, decrease the Nation's dependence on foreign supplies of fuel, protect the agricultural sector, preserve the natural environment, and simultaneously achieve reductions in other chemicals which cause acid rain, ground level ozone, and fine particle pollution; and

(22) therefore, the United States can protect the global environment directly by reducing emissions of carbon dioxide emissions and indirectly protect such

environment by demonstrating the technologies and practices which can be applied elsewhere.

SEC. 116. STATIONARY SOURCE CONTROLS.

(a) Not later than January 1, 1990, the Administrator of the Environmental Protection Agency shall revise the standards under section 111(b) of the Clean Air Act to require a standard for carbon dioxide emissions applicable to nonutility stationary sources, expressed in terms of emissions of such pollutant per unit or product output.

(b) Standards pursuant to the requirements of subsection (a) shall be established for each class or category of stationary sources which is more than a minimal emitter of carbon dioxide. Not later than January 1, 1992, the Administrator shall promulgate standards applicable to—

(1) cement kilns, which standards shall require, not later than January 1, 2000, an emission rate equivalent to a reduction in carbon dioxide emissions per unit of production of not less than 25 percent from 1988 average levels unless the Administrator determines that such a requirement is technologically infeasible;

(2) iron and steel manufacturing operations, which standards shall require, not later than January 1, 2000, an emission rate equivalent to a reduction in carbon dioxide emissions per unit of production of not

less than 25 percent from 1988 average levels unless the Administrator determines that such a requirement is technologically infeasible;

(3) pulp and paper mills, which standards shall require, not later than January 1, 2000, an emission rate equivalent to a reduction in carbon dioxide emissions per unit of production of not less than 25 percent from 1988 average levels unless the Administrator determines that such a requirement is technologically infeasible; and

(4) synthetic fiber plants, which standards shall require, not later than January 1, 2000, an emission rate equivalent to a reduction in carbon dioxide emissions per unit of production of not less than 35 percent from 1988 average levels unless the Administrator determines that such a requirement is technologically infeasible.

SEC. 117. MOBILE SOURCE CONTROLS.

(a) The Clean Air Act is amended as follows:

(1) in section 202(a)(3)(A)(i), by inserting before the period at the end of the first sentence, the following: "and, for emissions of carbon dioxide, during and after model year 1990";

(2) in section 202(a)(3)(A)(ii) by striking out the period at the end of clause (II) and inserting in lieu

thereof a comma and the word "and", and by adding at the end thereof the following new clause:

"(III) 1990 in the case of carbon dioxide shall contain standards which require a reduction of at least 10 percent in 1990; at least 25 percent in 1995; at least 50 percent in 2000; and at least 75 percent in 2010."; and

(3) inserting immediately after section 202(b)(1)(B) the following new language:

"The regulations under subsection (a) applicable to emissions of carbon dioxide from light-duty vehicles and engines shall provide that emissions of carbon dioxide may not exceed—

"(I) 360 grams of carbon dioxide per vehicle mile from light-duty vehicles and engines manufactured during and after model year 1990;

"(II) 300 grams per mile for light-duty vehicles and engines manufactured during and after model year 1995;

"(III) 200 grams per mile for light-duty vehicles and engines manufactured during and after model year 2000; and

"(IV) 100 grams per mile for light-duty vehicles and engines manufactured during and after model year 2010.".

SEC. 118. RESIDENTIAL CONTROLS.

(a) Not later than January 1, 1991, the Administrator shall promulgate regulations identifying the best available residential control technology available for central furnaces, air conditioners, and hot water heaters designed and sold for installation in single-family dwellings. For purposes of this section, "best available residential control technology" means that technology which achieves in a unit which is commercially available the maximum degree of reduction of emissions of carbon dioxide, whether directly through combustion or indirectly through consumption of electrical energy. Unless and until such regulations are promulgated and become effective, the best available control technology shall be deemed to be as follows:

(1) for furnaces, that which achieves an AFUE of .90 for oil, an AFUE of .95 for gas and a COP of 2.6 for electric heat pumps;

(2) for central air conditioners, that which achieves an Energy Efficiency Rating of not less than 15.0; and

(3) for hot water heaters, that which achieves an EF of 64 for gas and 96 for electricity.

(b) Each new single-family dwelling for which a building permit is issued on or after January 1, 1992, which is equipped with a central furnace, central air conditioner or hot water heater, shall be equipped only with one which meets or exceeds the emission limitation achieved by the best available residential control technology.

(c) Effective January 1, 1993, each replacement central furnace, central air conditioner, or hot water heater installed in a single-family dwelling shall meet or exceed the emissions limit achieved by the best available residential control technology.

(d) Not later than January 1, 1990, the Secretary of the Treasury shall recommend to the Congress means of encouraging the replacement of central furnaces, air conditioners, and water heaters and otherwise minimizing the emissions of carbon dioxide and other greenhouse gases from residential units through a system of tax or other incentives.

PART C—METHANE

SEC. 126. SHORT TITLE.

This part may be cited as the "Methane Emission Elimination Act".

SEC. 127. METHANE SOURCE IDENTIFICATION AND ASSESSMENT.

(a) Not later than January 1, 1992, the Administrator of the Environmental Protection Agency, in consultation with the Administrators of the National Oceanic and Atmospheric Administration and the National Aeronautics and Space Administration, shall submit to the Congress a report on the following:

(1) the contribution of methane to global climate change;

(2) the sources and sinks of methane;

(3) the methods of controlling emissions of methane; and

(4) the relationship between emissions of methane and concentrations of other trace gases, including the hydroxyl radical.

(b) The Solid Waste Disposal Act is amended by—

(1) inserting in section 4001 immediately before "are environmentally" the following: "minimize emissions and other releases to the environment and which otherwise";

(2) in section 4002(c)(1) striking the words "reasonable protection of ambient air quality" and substituting "and the minimization of emissions and other releases to the environment of pollutants including, but not limited to, methane or other harmful gases or materials";

(3) in section 4003(a) adding a new paragraph (7) as follows:

"(7) The plan shall provide for methods (including prohibitions on the nature of materials which are disposed), practices, or technologies which minimize emissions of methane and other gases, both during operation and after closure."; and

(4) in section 4007(a) inserting immediately before the period at the end of the second sentence the following: ", provided that the Administrator determines that such plan satisfies the requirements of paragraph (7) of section 4003. Plans which fail to satisfy such requirements shall be disapproved".

(c) Not later than January 1, 1992, the Administrator shall promulgate regulations implementing the requirements of this section and requiring State plans developed under subtitle D of the Solid Waste Disposal Act to be amended and either approved or disapproved by July 1, 1993. Any plan not affirmatively approved by such date shall be deemed disapproved for purposes of the Solid Waste Disposal Act. Amended plans shall require all facilities constructed after January 1, 1993, subject to subtitle D to be designed, constructed, and operated so as to minimize emissions of methane and shall require all existing facilities to be modified prior to January 1, 1993, and thereafter operated so as to minimize emissions of methane and other pollutants.

(d) Effective January 1, 1994, mass releases of methane, whether through intentional venting of wells or otherwise, and flaring of methane are prohibited.

PART D—MISCELLANEOUS PROVISIONS

SEC. 128. FEDERAL ENFORCEMENT.

(a)(1) Whenever on the basis of any information the Administrator determines that any person has violated or is in violation of any requirement of this title, the Administrator may issue an order assessing a civil penalty for any past or current violation, requiring compliance immediately or within a specified time period, or both, or the Administrator may commence a civil action in the United States district court in the district in which the violation occurred for appropriate relief, including a temporary or permanent injunction.

(2) Any order issued pursuant to this subsection may include a suspension or revocation of any permit issued by the Administrator and shall state with reasonable specificity the nature of the violation. Any penalty assessed in the order shall not exceed $25,000 per day of noncompliance for each violation of a requirement of this Act. In assessing such a penalty, the Administrator shall take into account the seriousness of the violation and any good faith efforts to comply with applicable requirements.

(b) Any order issued under this section shall become final unless, no later than 30 days after the order is served, the person or persons named therein request a public hearing. Upon such request the Administrator shall promptly conduct a public hearing. In connection with any proceeding under this section the Administrator may issue subpoenas for the attendance and testimony of witnesses and the production of relevant papers, books, and documents, and may promulgate rules for discovery procedures.

(c) If a violator fails to take corrective action within the time specified in a compliance order, the Administrator may assess a civil penalty of not more than $25,000 for each day of continued noncompliance with the order and the Administrator may suspend or revoke any permit issued to the violator.

(d) Any person who—

(1) knowingly exceeds the production limits under section 107 (production phaseout for initial list) or section 109 (limitation on ozone depletion potential);

(2) knowingly introduces into interstate commerce a substance that was produced in violation of section 107 or section 109;

(3) knowingly imports a substance listed under section 105, a product containing such substance, or a product manufactured with a process that uses such substance, in violation of section 111 (certification of equivalent programs);

(4) knowingly introduces into interstate commerce a substance or product in violation of section 108 (limitation on use) or section 112 (labeling);

(5) knowingly omits material information or makes any false material statement or representation in any application, record, report, permit, or other document filed, maintained, or used for purposes of compliance with this title; or

(6) knowingly produces, transports, distributes, or uses any substance listed under section 105, a product containing such substance, or a product manufactured with a process that uses such substance, and who knowingly destroys, alters, conceals, or fails to file any record, application, report, or other document required to be maintained or filed for purposes of compliance with this title

shall, upon conviction, be subject to a fine in accordance with title 18 of the United States Code, for each day of violation, or imprisoned not to exceed 2 years, or both. If conviction is for a violation committed after a first conviction of such person under this paragraph, the maximum punishment under the respective paragraph shall be doubled with respect to both fine and imprisonment.

(e) Any person who violates any requirement of this title shall be liable to the United States for a civil penalty in an amount not to exceed $25,000 for each such violation.

(f) Each day of violation of any requirement of this title shall, for purposes of this section, constitute a separate violation. In addition, for purposes of section 107 (production phaseout for initial list), section 108 (limitation on use), section 109 (limitation on ozone depletion potential), and paragraphs (1), (2), (3), and (4) of subsection (d) of this section, the production, introduction into commerce, or importation of each 100 pounds of a substance listed under section 105 that is in excess of the production limits under section 107 or section 109 shall constitute a separate violation.

SEC. 129. JUDICIAL REVIEW OF FINAL REGULATIONS AND CERTAIN PETITIONS.

Any judicial review of any final action of the Administrator pursuant to this title shall be in accordance with sections 701 through 706 of title 5 of the United States Code, except that—

(1) a petition for review of any final action of the Administrator may be filed by any interested person in the Circuit Court of Appeals of the United States for the Federal judicial district in which such person resides or transacts business, and such petition shall be filed within 90 days from the date of such promulga-

tion or denial or after such date if such petition is for review based solely on grounds arising after such ninetieth day; action of the Administrator with respect to which review could have been obtained under this subsection shall not be subject to judicial review in civil or criminal proceedings for enforcement; and

(2) if a party seeking review under this Act applies to the court for leave to adduce additional evidence, and shows to the satisfaction of the court that the information is material and that there were reasonable grounds for the failure to adduce such evidence in the proceeding before the Administrator, the court may order such additional evidence (and evidence in rebuttal thereof) to be taken before the Administrator, and to be adduced upon the hearing in such manner and upon such terms and conditions as the court may deem proper; the Administrator may modify administrative findings as to the facts, or make new findings, by reason of the additional evidence so taken, and shall file with the court such modified or new findings and the Administrator's recommendation, if any, for the modification or setting aside of the original administrative order, with the return of such additional evidence.

SEC. 130. CITIZEN SUITS.

(a) Except as provided in subsections (b) and (c) of this section, any person may commence a civil action on his own behalf—

(1) against any person (including (a) the United States, and (b) any other governmental instrumentality or agency, to the extent permitted by the eleventh amendment to the Constitution) who is alleged to be in violation of any permit, regulation, condition, requirement, prohibition, or order which has become effective pursuant to this title; or

(2) against the Administrator where there is alleged a failure of the Administrator to perform any act or duty under this title which is not discretionary with the Administrator.

Any action under paragraph (a)(1) of this subsection shall be brought in the district court for the district in which the alleged violation occurred. Any action brought under paragraph (a)(2) of this subsection may be brought in the district court for the district in which the alleged violation occurred or the District Court of the District of Columbia. The district court shall have jurisdiction, without regard to the amount in controversy or the citizenship of the parties, to enforce the permit, regulation, condition, requirement, prohibition, or order, referred to in paragraph (1), to order such person to take such other action as may be necessary, or both, or to order the Administrator to perform the act or duty referred to in paragraph (2), as the case may be, and to apply any appropriate civil penalties.

(b) No action may be commenced under subsection (a)(1) of this section—

(1) prior to 60 days after the plaintiff has given notice of the violation to—

(A) the Administrator; and

(B) to any alleged violator of such permit, regulation, condition, requirement, prohibition, or order; or

(2) if the Administrator has commenced and is diligently prosecuting a civil or criminal action in a court of the United States to require compliance with such permit, regulation condition, requirement, prohibition, or order.

In any action under subsection (a)(1), any person may intervene as a matter of right. Any action respecting a violation under this Act may be brought under this section only in the judicial district in which such alleged violation occurs.

(c) No action may be commenced under paragraph (a)(2) of this section prior to 60 days after the plaintiff has given notice to the Administrator that he will commence such action. Notice under this subsection shall be given in such manner as the Administrator shall prescribe by regulation.

(d) In any action under this section the Administrator, if not a party, may intervene as a matter of right.

(e) The court, in issuing any final order in any action brought pursuant to this section or section 125, may award costs of litigation (including reasonable attorney and expert witness fees) to the prevailing or substantially prevailing party, whenever the court determines such an award is appropriate. The court may, if a temporary restraining order or preliminary injunction is sought, require the filing of a bond or equivalent security in accordance with the Federal Rules of Civil Procedure.

(f) Nothing in this section, or this title, shall restrict any right which any person (or class of persons) may have under any statute or common law to seek enforcement of any standard or requirement or to seek any other relief (including relief against the Administrator).

SEC. 131. SEPARABILITY.

If any provision of this title, or the application of any provision of this title to any person or circumstance, is held invalid, the application of such provision to other persons or circumstances, and the remainder of this title, shall not be affected thereby.

SEC. 132. RELATIONSHIP TO OTHER LAWS.

(a) Nothing in this title shall be construed to diminish the authority of the Administrator under the Clean Air Act, the Resource Conservation and Recovery Act or the Toxic Substances Control Act, or any other law, or to affect the authority of any other department, agency, or instrumentality of the United States under any provision of law to promulgate or enforce any requirement respecting the control of any substance, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere, or the global environment.

(b) Nothing in this Act shall preclude or deny any State or political subdivision thereof from adopting or enforcing any requirement respecting the control of any substance, practice, process, or activity for purposes of protecting the stratosphere or ozone in the stratosphere or the global environment.

SEC. 133. AUTHORITY OF ADMINISTRATOR.

The Administrator is authorized to prescribe such regulations as are necessary to carry out this Act.

TITLE II—GLOBAL CHANGE ADJUSTMENT AND MITIGATION

SEC. 201. SHORT TITLE.

This title may be cited as the "Environmental Adjustment Act of 1989".

SEC. 202. FINDINGS.

The Congress finds that—

(1) there has been an observed increase in global average temperatures of 0.7 degree centigrade in the last century;

(2) regardless of any action taken by humanity, there will be further global average temperature increases of up to 1 degree centigrade;

(3) such temperature increases will manifest themselves in widespread alterations of the current environment;

(4) such changes may include, but will almost certainly not be limited to, the following:

(A) a rise in the level of oceans, bays, sounds, and other bodies of water, with ensuing destruction of natural and manmade structures;

(B) shifts in patterns of rainfall and soil moisture, resulting in marked changes in agricultural productivity;

(C) changes in the distribution and seasonal availability of fresh water resources, including the exhaustion of surface and ground water supplies;

(D) increased political instability, with the potential for international conflict; and

(E) accelerated extinction of plant and animal species, including many now classified as endangered;

(5) the adverse effects of some such changes can be mitigated through proper long-range planning, analysis and, most importantly, action; and

(6) substantial resources can be saved through the adoption of a program to systematically identify the impacts of proposed actions on global environmental change and the effects of such changes on the natural environment and engineered structures and systems.

SEC. 203. AMENDMENT TO THE NATIONAL ENVIRONMENTAL POLICY ACT WITH REGARD TO GREENHOUSE GASES.

The National Environmental Policy Act of 1969 is amended by adding at the end thereof a new title as follows:

"TITLE III—GLOBAL PROTECTION

"Subtitle A—Atmospheric Protection

"SEC. 301. SHORT TITLE.

"This subtitle may be cited as the 'Atmospheric Protection Act of 1989'.

"SEC. 302. FINDINGS.

"The Congress, recognizing the profound and irreversible and potentially catastrophic impacts of humanity's activities on the global atmosphere and the world's environment, and the inability of science to predict with certainty the consequences for humanity of any such changes, hereby declares

that each person has a responsibility and obligation to avoid contamination of the atmosphere.

"SEC. 303. INTERPRETATION.

"The Congress authorizes and directs that, to the fullest extent possible: (1) the policies, regulations, and public laws of the United States shall be interpreted and administered in accordance with the policies set forth in this Act, and (2) all agencies of the Federal Government shall, with respect to pollutants, substances, products or practices which may contribute to global climate change, stratospheric ozone depletion or trace gas modification of the atmosphere—

"(A) utilize a systematic, interdisciplinary approach which will insure the integrated use of the natural and social sciences and the environmental design arts in planning and in decisionmaking which may have an impact on man's environment;

"(B) identify and develop methods and procedures, in consultation with the Council on Environmental Quality established by subchapter II of this chapter, which will assure that environmental contamination is minimized;

"(C) include in every recommendation on report or proposals for legislation and other major actions significantly affecting the quality of the human environment, a detailed statement by the responsible official on—

"(i) the environmental impact of the proposed action,

"(ii) any adverse environmental effects which cannot be avoided should the proposal be implemented,

"(iii) alternatives to the proposed action,

"(iv) the relationship between local short-term uses of man's environment and the maintenance and enhancement of long-term productivity, and

"(v) any irreversible and irretrievable commitments of resources which would be involved in the proposed action should it be implemented.

Such pollutants and substances shall include, at a minimum, the following: carbon dioxide, oxides of nitrogen, chlorofluorocarbons, halons, methyl chloroform, carbon tetrachloride and methane. Prior to making any detailed statement, the responsible Federal official shall consult with and obtain the comments of any Federal agency which has jurisdiction by law or special expertise with respect to any environmental impact involved. Copies of such statement and the comments and views of the appropriate Federal, State, and local agencies, which are authorized to develop and enforce environmental standards, shall be made available to the President, the Council on Environmental Quality and to the public as provided by section 552 of title 5, United States Code, and shall accompany the proposal through the existing agency review processes;

"(D) study, develop, describe and select appropriate alternatives which recognize and minimize the environmental impacts of such proposed action;

"(E) make available to States, counties, municipalities, institutions, and individuals, advice and information useful in restoring, maintaining, and enhancing the quality of the environment;

"(F) initiate and utilize ecological information in the planning and development of resource-oriented projects; and

"(G) assist the Council on Environmental Quality established by subchapter II of this chapter.".

TITLE III—INTERNATIONAL FINANCING

SEC. 301. NATIONAL ENVIRONMENTAL POLICY-INTERNATIONAL FINANCING.

The Congress finds that—

(1) the United States plays a significant role in determining the projects, policies, and lending practices

of international financial institutions, devoting more financial resources to such institutions than any other nation;

(2) such institutions have failed in some cases to assess the environmental consequences of their actions, resulting at times in deforestation, desertification, erosion, water pollution, water-borne disease, and other manifestations of unsustainable development;

(3) while such institutions are making some progress in their environmental performance, assessment of projects for environmental consequences is not always consistent, timely, or publicly accessible;

(4) consistent, timely assessment and public scrutiny of the environmental and social impacts of proposed international financial projects are essential to ensure sustainable development;

(5) models for the conduct of such assessments exist in various forms, including, but not limited to—

(A) the National Environmental Policy Act, its regulations, and its history in the courts of the United States;

(B) the goals and principles of Environmental Impact Assessment adopted by the Governing Council of the United Nations Environment Programme in June 1987; and

(C) the measures required to facilitate the environmental impact assessment of development assistance projects and programs recommended by the Council of the Organization for Economic Cooperation and Development at its 649th Meeting in October 1986;

(6) methods and procedures for environmental impact assessment should be adopted and utilized by borrowing countries or international financial institutions themselves, and cannot be imposed unilaterally by the United States; and

(7) the United States should encourage, to the extent possible, environmental impact assessment of the international financial activities in which it participates, with the goal of adoption by borrowing countries of their own procedures for assessing environmental impacts and alternatives.

SEC. 302. ENVIRONMENTAL ASSESSMENT INTERNATIONAL FINANCIAL ACTIVITIES.

Title I of the National Environmental Policy Act of 1969 (42 U.S.C. 4332) is amended by adding at the end thereof the following new section:

"SEC. 106. (a) Effective July 1, 1991, at least 120 days prior to a vote of the United States on a proposed action significantly affecting the quality of the human environment by an institution listed in section 22 of the Export-Import Bank Act Amendments of 1986, the official responsible for casting such vote shall request of the institution a detailed statement which meets the criteria set forth pursuant to subsection (b). All information received as a result of such request shall accompany the proposal through agency review processes, and shall be made available to borrower and donor countries and to the public.

"(b) The Council on Environmental Quality shall establish criteria for environmental impact assessment of international financial activities, sufficient to facilitate the consideration of environmental impacts in lending decisions. Such criteria shall include the solicitation of public comments, review of alternatives, and any other criteria found to be internationally recognized as an element of adequate environmental impact assessment.

"(c) The responsible official identified in subsection (a) shall not be required to verify the accuracy of the content of documents obtained under this section, except as necessary to identify:

"(1) minimum criteria which are not met; and

"(2) information pertinent to environmental impact assessment absent from the statement, but available to the responsible official through means other than the institution proposing the action.

A statement of findings under this subsection should accompany the proposed action through agency review processes, and shall be made available to borrower and donor countries and to the public.".

SEC. 303. COOPERATION AND TECHNICAL ASSISTANCE.

(a) Within 1 month after the date of enactment of this Act, and as necessary thereafter, officials charged with requesting a statement under section 305 of the National Environmental Policy Act of 1969 shall—

(1) inform the management of the institutions listed in section 22 of the Export-Import Bank Act Amendments of 1986 of the expected nature of such statements; and

(2) begin negotiations with institution management and representatives of other institution members, within the framework of international agreements, as necessary to facilitate the conduct of environmental impact assessments.

(b) The Secretary of the Treasury, assisted by the Secretary of State, the Secretary of the Interior, the Administrator of the Environmental Protection Agency, the Chairman of the Council on Environmental Quality, the Administrator of the Agency for International Development, the Administrator of the National Oceanic and Atmospheric Administration, and representatives of other interested agencies, shall, in cooperation with institutions referenced in paragraph (1) of subsection (a), make available upon the request of such institutions the appropriate United States Government personnel to assist in the following areas:

(1) the training of institution staff in environmental impact assessment procedures;

(2) the provision of long- and short-term advisers on environmental issues;

(3) participation in preparing environmental studies for projects with potentially significant environmental impacts; and

(4) the preparation of documents for public release, and the development of procedures to provide for the inclusion of interested nongovernmental organizations in the environmental review process;

and shall encourage other institution member countries to provide similar assistance.

(c) The Secretary of the Treasury shall also take steps with both donor and borrower nations to expand international consensus on the importance of environmental issues and to focus efforts on the need for reform, with particular emphasis on developing greater agreement on standards for projects that may affect ecosystems such as, but not limited to, tropical moist forests, wetlands, savannas, and other areas, and on securing greater support for programs and policies that encourage energy efficiency and conservation and integrated pest management.

SEC. 304. PROGRESS REPORT TO CONGRESS.

(a) The Secretary of the Treasury shall prepare and submit to the Committee on Environment and Public Works in the Senate, and the Committee on Merchant Marine and Fisheries in the House of Representatives, a detailed report, not later than 12 months after enactment of this Act, including an evaluation of the progress achieved by each international financial institution in adopting and implementing procedures for systematically assessing the environmental impacts of institution activities, and in the implementation of section 306 of the National Environmental Policy Act of 1969. The report shall be made available to borrower and donor countries and to the public.

(b) Not later than March 1, 1992, and again not later than January 1, 1993, the Council on Environmental Quality shall submit an interim progress report, and a detailed report respectively, to the Committee on Environment and Public Works in the Senate, and the Committee on Merchant Marine and Fisheries in the House of Representatives, on the efficacy of efforts by the United States to encourage consistent, timely environmental impact assessment within international financial institutions. The report shall be made available to borrower and donor countries and to the public.

SEC. 305. INVENTORY AND REVIEW OF FEDERAL FACILITIES, HOLDINGS AND ACTIVITIES.

(a)(1) Not later than January 1, 1991, the President shall direct each department, agency and other instrumentality of the United States to undertake a systematic and comprehensive survey of all Federal lands and structures to ascertain their vulnerability to changes associated with changes in the global environment. To the maximum extent practicable, such survey shall include the lands and structures of State and local government and Indian tribes as well. Such survey shall include, but not be limited to, the following:

(A) public highways, bridges, tunnels, and other transportation structures;

(B) ports, waterways, locks and dams;

(C) public buildings and monuments;

(D) publicly owned treatment works;

(E) national parks, forests, wilderness areas, wildlife refuges, marine sanctuaries, and all other comparable facilities; and

(F) national defense facilities, including but not limited to military bases and reservations, whether located in the United States or elsewhere.

(2) Not later than January 1, 1993, the President shall submit a report to the Congress containing the results of the survey required by this section and recommending both generic and site-specific actions and policies to—

(A) preclude further public or private investment in areas susceptible to loss or damage due to global environmental change; and

(B) minimize and mitigate the loss or damage due to the global environmental change which is likely to occur.

SEC. 306. GROUND WATER PROTECTION AND RECHARGE.

(a) The Congress finds that—

(1) a consequence of global climate change may be the exhaustion of ground and surface water resources essential to the maintenance of agricultural productivity, the loss of which could jeopardize the national economy and security;

(2) existing knowledge and technology of artificial recharge of ground water is inadequate to meet existing and anticipated future water resource problems and to take advantage of possible water resource opportunities; and

(3) a program to support and assure the study and development of artificial ground water recharge techniques is essential.

(b) The Secretary of the Army (hereinafter in this section referred to as the "Secretary") acting through the Chief of Engineers, is authorized to undertake a program of research, development, and demonstration of artificial ground water recharge techniques. The purpose of such program shall be to—

(1) demonstrate the usefulness of artificial ground water recharge as a method for improving ground water quantity and for preventing degradation of, or improving ground water quality;

(2) determine the economic viability of artificial ground water recharge as a method of augmenting existing water supplies and improving ground water quality on a local or regional basis; and

(3) develop new and more efficient techniques for the transfer of surface water to existing or potential water bearing underground strata.

(c) In order to advance the purpose of this section, the Secretary shall, at different locations throughout the United States, design, construct, and operate and maintain projects to demonstrate different artificial ground water recharge techniques. To the maximum extent feasible, such locations shall be chosen to reflect a variety of geological, physical, and chemical conditions affecting ground water quality and quantity. In selecting such locations, and carrying out such work, the Secretary shall consult and coordinate with appropriate State and local governmental agencies.

(d) In order to prevent any unnecessary duplication of effort, and in order to fully utilize the available expertise of other agencies and departments of the United States, the Secretary, in carrying out subsection (b) of this section, shall consult and coordinate with the United States Geological Survey, the Environmental Protection Agency, the Bureau of Reclamation, and other appropriate agencies and departments of the United States.

(e) To the extent possible, activities undertaken pursuant to subsection (b) of this section shall utilize existing or authorized Corps of Engineers water resources projects, programs, facilities, and personnel.

(f) Not later than May 30, 1993, the Secretary shall transmit to the Committee on Public Works and Transportation of the House of Representatives and the Committee on Environment and Public Works in the Senate, a final report describing the results of activities undertaken pursuant to this section. Not later than 30 months after the date of enactment of this Act, the Secretary shall transmit to such Committees of Congress a brief report describing the progress of such activities.

(g) For purposes of this section, the term—

(1) "artificial ground water recharge" shall include but not be limited to techniques to supplement or otherwise affect ground water supplies

such as wells, pits, ponds, spreading basins, or gravel chains; and

(2) "non-Federal sponsor" shall mean a State, city, county, or any other entity which derives its powers from a State constitution, or was created pursuant to an Act of a State legislature.

(h) This section shall be known as the "Ground Water Recharge Research and Demonstration Act".

TITLE IV—INTERNATIONAL COOPERATION

SEC. 401. FINDINGS.

The Congress finds that—

(1) complete elimination of chlorofluorocarbons and related chemicals which are destroying the Earth's protective ozone layer and adding to global temperature increases requires concerted international agreement and action;

(2) the most effective controls on emissions of carbon dioxide, hydrocarbons, oxides of nitrogen, methane and other trace gases which are increasing global temperatures will require concerted international agreement and action;

(3) international agreements to address some aspects of these global threats are already underway and include—

(A) an international protocol to reduce production and use of chlorofluorocarbons;

(B) an international agreement to reduce emissions and trans-boundary transport of oxides of sulfur; and

(C) an international agreement to reduce emissions and trans-boundary transport of oxides of nitrogen; and

(4) in the absence of such international cooperation and agreement, the interests of the United States will be directly and substantially threatened due to—

(A) damage to the domestic environment;

(B) damage to the national economy;

(C) increased international tension; and

(D) increased danger of international armed conflict.

SEC. 402. INTERNATIONAL COOPERATION.

(a) The President is hereby directed to request that the United Nations promptly establish a temporary new agency to be headed by the director of the United Nations Environmental Program, to—

(1) coordinate international efforts to minimize and mitigate the effects of unavoidable environmental alterations; and

(2) provide financial, technical and other assistance to developing nations to facilitate improvements in their domestic standards of living while minimizing or eliminating contributions to global, continental and sub-continental scale environmental damages.

(b) The President is hereby directed to request that the United Nations establish a temporary program of forestation to—

(1) assist and encourage nations in halting activities which are resulting in destruction of the world's forests; and

(2) undertake a global program of reforestation.

(c) The President is hereby directed to instruct the United States representatives to bilateral and multilateral organizations other than the United Nations to review the activities of such organizations to assure that their actions and programs are consistent with the goals and objectives of this Act and, where necessary, to persuade such organizations to adopt programs to implement the goals and objectives of this Act.

SEC. 403. NATIONAL GOAL.

It is hereby established as a national goal of the United States to derive 50 percent of the national supply of energy from nonpolluting technologies and practices by the year 2000 and 100 percent by the year 2050.

TITLE V—DEVELOPMENT OF NON-POLLUTING ENERGY SOURCES

SEC. 501. NATIONAL NEW ENERGY DEVELOPMENT INSTITUTE.

(a) The Administrator is authorized to charter a national organization on energy production standards and practices. The organization shall be called the National New Energy Development Institute (hereinafter referred to as the "institute"). The institute shall be incorporated in the District of Columbia and shall have a board of directors of not less than 11 members which shall be representative of the interests of energy manufacturing industries, utilities, industries and commercial concerns which are major users of energy. The board may also include representatives of the public interest, persons with expertise in energy development, and elected or appointed officials of State utility commissions. The Administrator shall grant (or deny) a charter on the basis of a prospectus or other proposal from a prospective board of directors.

(b) It shall be the purpose of the institute to encourage and promote the use of energy efficient technologies which, with due regard for the cost, will—

(1) minimize the quantity of carbon dioxide and other greenhouse gases which enters the atmosphere;

(2) minimize the consumption of scarce resources;

(3) meet the needs of both developed and lesser developed economies;

(4) insure that United States industry can remain competitive both domestically and internationally; and

(5) assure that human health and the environment (include impacts on global climate) will not be adversely affected.

(c)(1) The institute shall have power to receive, purchase, hold, sell and convey real property; to sue and be sued, complain and defend in courts of law and equity within the jurisdiction of the United States; to make, adopt and amend a constitution, bylaws, rules, and regulations for the conduct of its business; and to provide for the election of its officers and to define their duties: *Provided,* That such constitution, bylaws, rules and regulations are not inconsistent with the provisions of this section or any other law of the United States or of any States thereof.

(2) All powers necessary to govern, direct and manage the institute, including the power to—

(A) establish energy technology standards,

(B) identify and promote the use of these technologies both domestically and internationally,

(C) appoint and replace members of the board, and

(D) hire personnel, enter into contracts and otherwise conduct all business necessary and appropriate to carry out the purposes of the institute, shall be vested in the board of directors.

(d) The institute shall establish industry energy technology standards which address the design, application, efficiency, and other standards of performance deemed appropriate to protect the global climate which shall further the purposes of subsection (b) when implemented on a voluntary basis by entities in the energy industry.

(e) In deciding whether to grant or extend a charter under this section, the Administrator shall take into account any information with respect to the following criteria as evidenced in the prospectus prepared and presented by the prospective board of the institute:

(1) the ability of the board to work with the energy industry and its commercial clients to assure implementation of the standards established under subsection (d) to the fullest extent practicable;

(2) the expertise available to the board in energy management practices and the measures necessary to protect public health and the environment (including global climate) from any adverse effects which may result from such practices; and

(3) financial support for the programs of the board committed to the board or through its affiliate organizations to carry out the programs of the institute.

(f) The board shall conduct its business in open meetings (subject to the requirements for privacy in personnel matters and review of confidential business information) and shall, to the maximum extent practicable, seek public comment and participation in the development of its programs.

(g) The initial charter of the institute shall extend for a period of not more than 4 years with an option for continuous renewal at 7-year intervals thereafter. The Administrator may establish a term of shorter duration or may grant a charter on specified conditions of performance, if it is necessary and appropriate to secure the purposes of this section.

(h)(1) The Administrator is authorized to make grants to the institute in an amount not to exceed $1,000,000 in any fiscal year.

(2) There are authorized to be appropriated $2,500,000 for the fiscal year ending September 30, 1990, and $1,000,000 for each succeeding fiscal year through September 30, 1994, to carry out the purposes of subsection (e)(3) and $1,000,000 for each fiscal year during the period ending prior to October 1, 1994, to carry out the provisions of paragraph (1) of this subsection.

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